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Foreword



Pocket Statistics is published annually for the use of NASA managers and their immediate staffs. Included is a summary of the NASA Program goals and objectives, major mission performance, USSR spaceflight; summary comparisons of the USA and USSR space records, and selected technical, financial, and manpower data.

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Section A

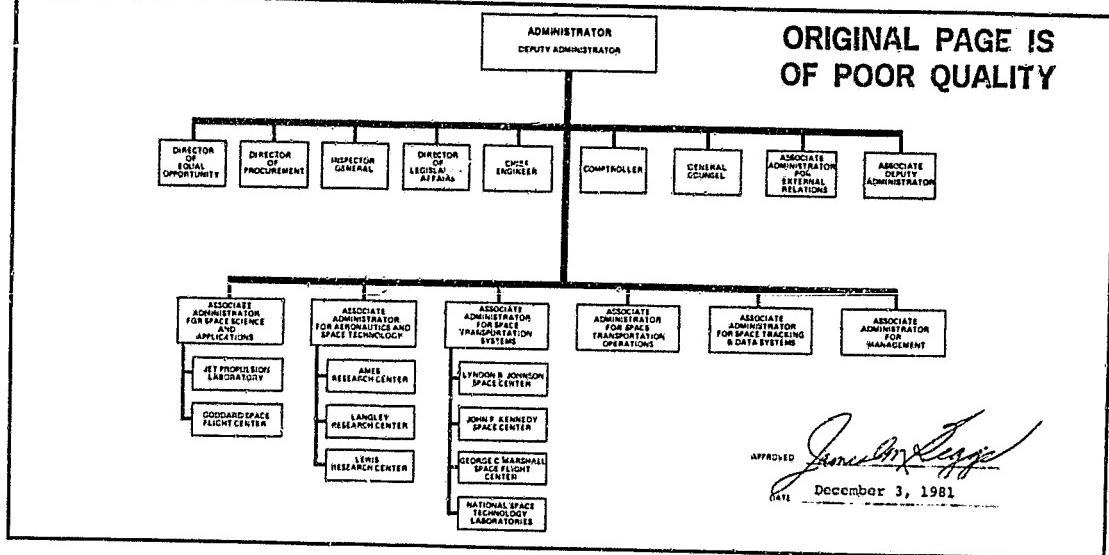
U. S. Space Policy & Program Goals

LEO J. PEGG, JR.

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NASA ORGANIZATION

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APPROVED

Leo J. Pegg, Jr.
DATE December 3, 1981

A-3

National Aeronautics And Space Act Of 1958

The Declaration of Policy and Purpose of the National Aeronautics and Space Act is outlined in Section 102 (a) through (e) of PL 85-568 as follows:

Sec. 102. (a) The Congress hereby declares that it is the policy of the United States that activities in space should be devoted to peaceful purposes for the benefit of all mankind.

(b) The Congress declares that the general welfare and security of the United States require that adequate provision be made for aeronautical and space activities. The Congress further declares that such activities shall be the responsibility of, and shall be directed by, a civilian agency exercising control over aeronautical and space activities sponsored by the United States, except that activities peculiar to or primarily associated with the development of weapons systems, military operations, or the defense of the United States (including the research and development necessary to make effective provision for the defense of the United States) shall be the responsibility of, and shall be directed by, the Department of Defense; and that determination as to which such agency has responsibility for and direction of any such activity shall be made by the President in conformity with section 201 (e).

(c) The aeronautical and space activities of the United States shall be conducted so as to contribute materially to one or more of the following objectives:

(I) The expansion of human knowledge of phenomena in the atmosphere and space;

(2) The improvement of the usefulness, performance, speed, safety, and efficiency of aeronautical and space vehicles;

(3) The development and operation of vehicles capable of carrying instruments, equipment, supplies, and living organisms through space;

(4) The establishment of long-range studies of the potential benefits to be gained from the opportunities for, and the problems involved in the utilization of aeronautical and space activities for peaceful and scientific purposes;

(5) The preservation of the role of the United States as a leader in aeronautical and space science and technology and in the application thereof to the conduct of peaceful activities within and outside the atmosphere;

(6) The making available to agencies directly concerned with national defense of discoveries that have military value or significance, and the furnishing by such agencies, to the civilian agency established to direct and control nonmilitary aeronautical and space activities, of information as to discoveries which have value or significance to that agency;

(7) Cooperation by the United States with other nations and groups of nations in work done pursuant to this Act and in the peaceful application of the results thereof; and

(8) The most effective utilization of the scientific and engineering resources of the United States, with close cooperation among all interested agencies of the United States in order to avoid unnecessary duplication of effort, facilities, and equipment.

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NASA GOALS

National aerospace goals, established by the President and the Congress, are directly reflected in the NASA aerospace missions, and in the principal programs identified in its budget submission. The national aerospace goals (U.S. Civil Space Policy) for the next decade are as follows:

- Emphasize space applications that will bring important benefits to our understanding of Earth resources, climate, weather, pollution and agriculture, and provide for the private sector to take an increasing responsibility in remote sensing and other applications.
- Emphasize space science and exploration in a manner that reflects the challenge and excitement and permits the nation to retain the vitality of its space technology base, yet provides short-term flexibility to impose fiscal constraints when conditions warrant.
- Take advantage of the flexibility of the space shuttle to reduce the cost of operating space over the next two decades to meet national needs.
- Increase benefits for resources expended through better integration and technology transfer among the national space programs and through more joint projects when appropriate, thereby increasing the return on the 100 billion investment in space to the benefit of the American people.
- Assure American scientific and technological leadership in space for the security and welfare of the nation and continue R&D necessary to provide the basis for later programmatic decisions.
- Demonstrate advanced technological capabilities in open and imaginative ways having benefit for developing as well as developed countries.
- Foster space cooperation with nations by conducting joint programs.
- Confirm our support of the continued development of a legal regime for space that will assure its safe and peaceful use for the benefit of mankind.
- Continue to pursue the improvement of the usefulness, performance, speed, safety and efficiency of aeronautical and space vehicles as authorized in the Space Act of 1958.

International Programs

International Cooperation Scope, Objectives, and Guidelines

- **SCOPE:** Pursuant to the National Aeronautics and Space Act of 1958, NASA has developed an aggressive program of international cooperation which has opened the entire range of its space activities to foreign participation. Cooperative programs and activities involving nations and groups of nations are established by (1) agency to agency memoranda of understanding (MOUs), (2) agency to agency letter agreements, or (3) more formal intergovernmental agreements. The relative complexity, cost, and duration of the program or project dictate in part the type of arrangement used to establish the peaceful purposes and applications of space science and technology and provide opportunities for contribution by scientists and agencies of other countries to the tasks of increasing human understanding and use of the spatial environment. Cooperation also supports operating requirements for the launch and observation of spacecraft.
- **OBJECTIVES:** Cooperation by the United States (US) with other nations contributes to the US aeronautical and space research program and to broader national objectives by:
 - Stimulating scientific and technical contributions from abroad
 - Enhancing the potential for the development of the state of the art
 - Providing access to foreign areas of geographic significance for measurements of space flights
 - Enhancing satellite experiments by foreign ground-support programs
 - Developing cost-sharing and complementary space programs
 - Extending ties among scientific and national communities
 - Supporting US foreign relations and foreign policy
- **GUIDELINES:** NASA's international activities follow guidelines which recognize the interests of the US and foreign scientists, establish a basis for sound programs of mutual value, and contribute substantively to the objectives of international cooperation. These guidelines provide for:
 - Designation by each participating government of a central civilian agency for the negotiation and supervision of joint efforts
 - Conduct of projects and activities having scientific validity and mutual interest
 - Agreement upon specific projects rather than generalized programs
 - Acceptance of financial responsibility by each participating agency for its own contributions to joint projects
 - Provision for the widest and most practicable dissemination of the results of cooperative activities

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International Programs Summary

	Number Countries/ International Organizations	Number Projects/ Investigations/Actions Completed or In Progress As of January 1, 1982		Number Countries/ International Organizations	Number Projects/ Investigations/Actions Completed or In Progress As of January 1, 1982
COOPERATIVE ARRANGEMENTS					
Cooperative Spacecraft Projects	8	37			
Experiments on NASA Missions			REIMBURSABLE LAUNCHINGS		
Experiments with Foreign Principal Investigators	13	70	Launchings of Non-US Spacecraft	12	86
UP Experiments with Foreign Co- investigators or Team Members	10	55	Foreign Launchings of NASA Spacecraft	1	4
Experiments on Foreign Spacecraft	3	6			
Cooperative Sounding Rocket Projects	22	1,754			
Joint Development Projects	4	7			
Cooperative Ground-Based Projects			TRACKING & DATA ACQUISITION		
Remote Sensing	53	163	NASA Overseas Tracking Stations/ Facilities	20	48
Communication Satellite	51 (27)*	18	NASA Funded SAO Optical & Laser Tracking Facilities	15	26
Meteorological Satellite	44 (132)**	11	Reimbursable Tracking Arrangements		
Geodynamics	43	17	Support Provided by NASA	5	46
Space Plasma	38	5	Support Received by NASA	3	12
Atmospheric Study	14	11			
Support of Manned Space Flights	21	2			
Solar System Exploration	8	9			
Astronomy & Astrophysics	25	10			
Cooperative Balloon and Airborne Projects			PERSONNEL EXCHANGES		
Balloon Flights	8	12	Resident Research Associateships	45	1,223
Airborne Observations	12	17	International Fellowships	21	358
International Solar Energy Projects	21	9	Technical Training	12	967
Cooperative Aeronautical Projects	5	37	Foreign Visitors	126	78,331
Scientific & Technical Information Exchanges	70	3			

*AIDSAT Demonstrations
**APT Stations

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SPACE TRANSPORTATION SYSTEMS

Goals and Objectives

- The operational Space Transportation System will open a new era in space exploration and utilization for U.S. Government agencies, commercial firms, and foreign groups.
- Firm commitments exist for 28 operational Shuttle flights during 1982-85 representing 20 different users.
- Operational traffic forecast calls for 216 flights over a 15-year period.
- Operating costs will be recovered by NASA.
- NASA payloads will account for 40% of the operational missions, DOD (or 27%), and others, including commercial and foreign users, 33%.
- Two Shuttle launch sites - Kennedy Space Center (three-fourths of flights) and, beginning in 1984, Vandenberg AFB.

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- Office of Space Transportation Operations will:
 - Develop financial plans and pricing structures.
 - Provide all necessary services to potential users.
 - Manage expendable launch vehicles during transition to a fully operational fleet of orbiters.
- Office of Space Transportation Systems will:
 - Manage ground and flight testing until achievement of operational status.
 - Upgrade design and develop system improvements during operational period.

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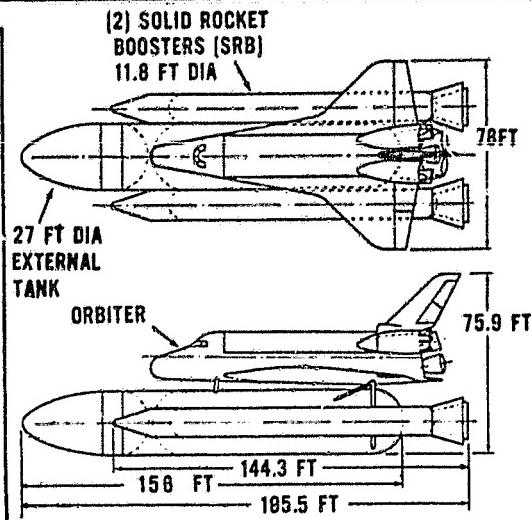
SPACE TRANSPORTATION SYSTEMS

FLIGHT INTRODUCTION - The Space Shuttle will be a manned reusable vehicle. The Shuttle will consist of a reusable orbiter, mounted piggyback at launch on a large expendable liquid propellant tank and two recoverable and reusable solid propellant rocket boosters. At launch, the two solid rockets and the orbiter's three liquid rocket engines will ignite and burn simultaneously. At an altitude of about 25 statute miles, the spent solid rocket will be detached and parachuted into the ocean for recovery and reuse. The orbiter and its propellant tank will continue ascent. After main engine cutoff, the expendable propellant tank will be jettisoned and impact into a remote ocean area. The orbiter with its crew and payload will remain in orbit to carry out its mission, normally for about 7 days. When the mission is completed, the orbiter will return to Earth and land like an airplane.

MISSION AND OPERATIONAL PLANNING - The Shuttle will carry into space virtually all of the nation's civilian and military payloads as well as many international, civilian and government payloads. These include science and applications payloads for private industry, universities, and research organizations.

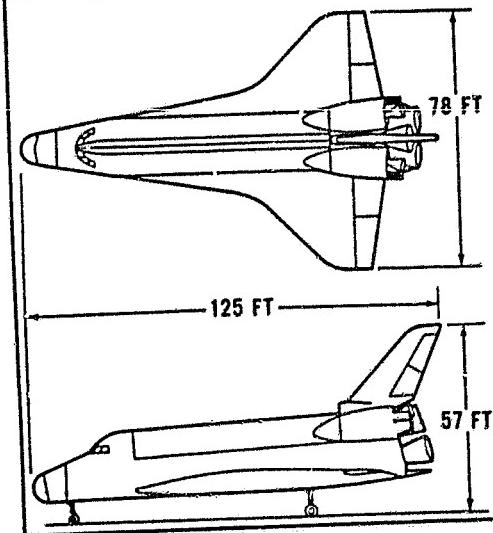
In addition to the first Space Shuttle Orbiter, the Columbia, three other orbiters will comprise the Space Shuttle fleet. These are the Challenger with its first flight scheduled for November 1982, the Discovery scheduled to fly in December 1983, and the Atlantis which will make its maiden flight in March 1985.

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SPACE TRANSPORTATION SYSTEMS



PROGRAM MANAGEMENT

Office of Space Transportation Systems is responsible for overall development, including establishment of overall performance requirements, research and development budget and resource requirements, program planning and the allocation and control of resources.

Office of Space Transportation Operations is responsible for the activities and logistics of operating the system for all users.

Johnson Space Center (JSC) is responsible for the day-to-day management of the program, establishing detailed performance requirements, overall systems integration, resources utilization and coordination of requirements, program scheduling, and configuration control.

Kennedy Space Center (KSC) is responsible for design of launch and recovery facilities, and will serve as the launch and landing site for the Space Shuttle development flights and for operational missions requiring launches in an easterly direction.

Marshall Space Flight Center (MSFC) is responsible for the development, production, and delivery of the orbiter main engine, the solid rocket booster, and the hydrogen-oxygen external propellant tank.

CHARACTERISTICS

- Orbiter and Booster launched vertically
- Orbiter = Reusable Delta winged manned vehicle
- Size - Same as a DC-9
- Crew - Commander, pilot, 1 mission specialist, 1 payload specialist - capacity 7
- Cargo Compartment - 15 ft dia, 60 ft long (carry loads up to 65,000 lbs)
- Launch and Reentry Speed - no more than 3 G

USES

- Launch most unmanned spacecraft
- Study space near and far
- Deploy scientific & applications satellites of all types
- Service and repair satellites
- Retrieve satellites from Earth orbit
- International cooperation
- Rescue missions
- Will replace most of the expendable launch vehicles currently used

Space Science And Applications Goals

LIFE SCIENCES	To uncover the medical problems of manned spaceflight and develop solutions or counter measures; to use the space environment for conducting experiments on the influence of gravity on biological processes; to understand the origin and distribution of extraterrestrial life in the universe.
ASTROPHYSICS	To use access to space to carry out measurements of celestial objects at wave-lengths and particle energies which cannot be measured from the ground and to conduct basic experiments making use of the unique space environment.
PLANETARY	To further our understanding of the origin and evolution of the solar system; to further our understanding of the origin and evolution of life; to further our understanding of Earth by comparative studies of the Moon and other planets; to further our understanding of near-Earth resources.
SPACELAB MISSION	To plan and conduct Spacelab and Orbiter-attached missions for NASA programs; to maintain strong interface between STS and NASA users; and to lead coordinated Science & Applications Space Platform activities.
SOLAR TERRESTRIAL	To understand the generation of energy in the Sun, its transformation into different forms and transport into interplanetary space, and its interaction with the Earth's magnetic field, and plasma and ionosphere environments; to understand the plasma processes which characterize the Earth's magneto- and ionosphere; to understand the Sun as a star.
REMOTE SENSING	Establishment of a space system to make timely global observations of Earth's atmosphere and land and water surfaces.
COMMUNICATIONS	Maintenance of U.S. leadership in satellite communications by developing and flight-proving wideband and narrowband technology.
MATERIAL PROCESSING	Understanding gravitational effects on materials processing; applying this knowledge to enhance materials processing on Earth; and, exploitation of the space environment to produce unique, low-volume, high-value materials.
TECHNOLOGY TRANSFER	Assessment of national priorities and user needs which can benefit from demonstrations and transfer of space technologies to operational users.

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AERONAUTICS RESEARCH AND TECHNOLOGY GOALS

AERONAUTICAL TECHNOLOGY PROGRAMS					
PROPELLION	Turboprop, 2	Source Noise & Pollution	Power Transmission	Alternative	
PROPULSION	Turboprops			Tilt Rotor	F-16 HIMAT
AERODYNAMICS	Supercritical Airfoils	Drag Reduction	Lift Augmentation		Maneuverability
STRUCTURES	Composite Materials	Crash-Worthy Structures	High-Temperature Materials	Computer-Aided Design	
ELECTRONICS	Guidance & Navigation Displays	Digital Fly-by-Wire	Terminal Operations	Integrated Controls	All-Weather Day-Night Operations
					Active Controls

AERONAUTICAL TECHNOLOGY OBJECTIVES			
TECHNOLOGY FOR:	TIME	EFFECT	
ENERGY 50% FUEL REDUCTION	1990	100 MILLION BBL/YR SAVINGS	
POLLUTION 90% NO _x REDUCTION	1985	MEETS ALL CLEAN AIR RECOMMENDATIONS	
PERFORMANCE 15% EFFICIENCY INCREASE	1990	REDUCED TRANSPORTATION COST	
NOISE MAXIMUM PRACTICAL IMPROVEMENT	CONTINUING	ELIMINATE ENVIRONMENTAL RESTRAINTS	
SAFETY MAXIMUM PRACTICAL IMPROVEMENT	CONTINUING	SAVE LIVES AND PROPERTY	

Section B

Space Flight Activity

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Major Space "Firsts"

LAUNCH DATE	MISSION	EVENT DESCRIPTION	DATE	US	USSR	LAUNCH DATE	MISSION	EVENT DESCRIPTION	DATE	US	USSR
4 Oct 57	Sputnik 1	Man Made Earth Satellite	4 Oct 57		X	3 Mar 72	Pioneer 10	Jupiter Flyby	3 Dec 73	X	
3 Nov 57	Sputnik 2	Bio-satellite	3 Nov 57		X	3 Nov 73	Mariner 10	Mercury Flyby	16 Mar 74	X	
1 Feb 58	Explorer	Discovered Radiation Belt (Van Allen)	1 Feb 58	X		8 Jun 75	Venus 9	Venus Orbit	22 Oct 75	X	X
2 Jan 59	Luna 1	Escaped Earth's Gravity	2 Jan 59	X		15 Jul 75	Apollo/Soyuz	Manned International Co-operative Mission - Rendezvous,	17 Jul 75	X	X
17 Feb 59	Vanguard II	Earth Photo from Satellite	17 Feb 59	X							
12 Sep 59	Luna 2	Lunar Impact	14 Sep 59	X	X						
4 Oct 59	Luna 3	Lunar Picture (Dark Side)	7 Oct 59		X						
1 Apr 60	TIROS 1	Weather Satellite	1 Apr 60		X						
13 Apr 60	Transit 1B	Navigation Satellite	13 Apr 60		X						
12 Aug 60	ECHO-1	Communications Satellite	12 Aug 60		X						
19 Aug 60	Sputnik 5	Orbited Animals	20 Aug 60		X						
12 Apr 61	Vostok 1	Manned Orbital Flight	12 Apr 61		X						
26 Aug 62	Mariner 2	Interplanetary Probe - Venus Flyby	14 Dec 62	X							
1 Nov 62	Mars 1	Mars Flyby	Jun 63		X						
16 Jun 63	Vostok 6	Female in Orbit	16 Jun 63		X						
28 Nov 64	Mariner 4	Mars Flyby Pictures	15 Jul 65	X		20 Aug 77	Voyager 1	Multiday Operation of spacecraft on Surface of Another Planet	20 Jul 76	X	
16 Nov 65	Venera 3	Venus Impact	1 Mar 66		X						
31 Jan 66	Luna 9	Lunar Soft Landing	3 Feb 66		X						
16 Mar 66	Gemini 8	Manned Docking of Two Craft	16 Mar 66	X		12 Apr 81	STS-1	In-situ analysis of surface material and biological experiments conducted on another planet (Mars)	20 Jul 76	X	
31 Mar 66	Luna 10	Lunar Orbiter	3 Apr 66	X	X	15 Nov 81	STS-2	Saturn Flyby			
17 Apr 67	Surveyor 3	Lunar Surface Sampler	20 Apr 67	X							
14 Sep 68	Zond 5	Circumlunar of Live Animals	21 Sep 68		X						
21 Dec 68	Apollo 8	Manned Lunar Orbit	24 Dec 68	X							
16 Jul 69	Apollo 11	Manned Lunar Landing	20 Jul 69		X						
16 Jul 69	Apollo 11	Lunar Soil Samples Returned	24 Jul 69		X						
17 Aug 70	Venera 7	Venus Soft Landing	15 Dec 70		X						
19 May 71	Mars 2	Mars Impact	27 Nov 71		X						
28 May 71	Mars 3	Mars Soft Landing	2 Dec 71		X						
30 May 71	Mariner 9	Mars Orbit	13 Nov 71	X							

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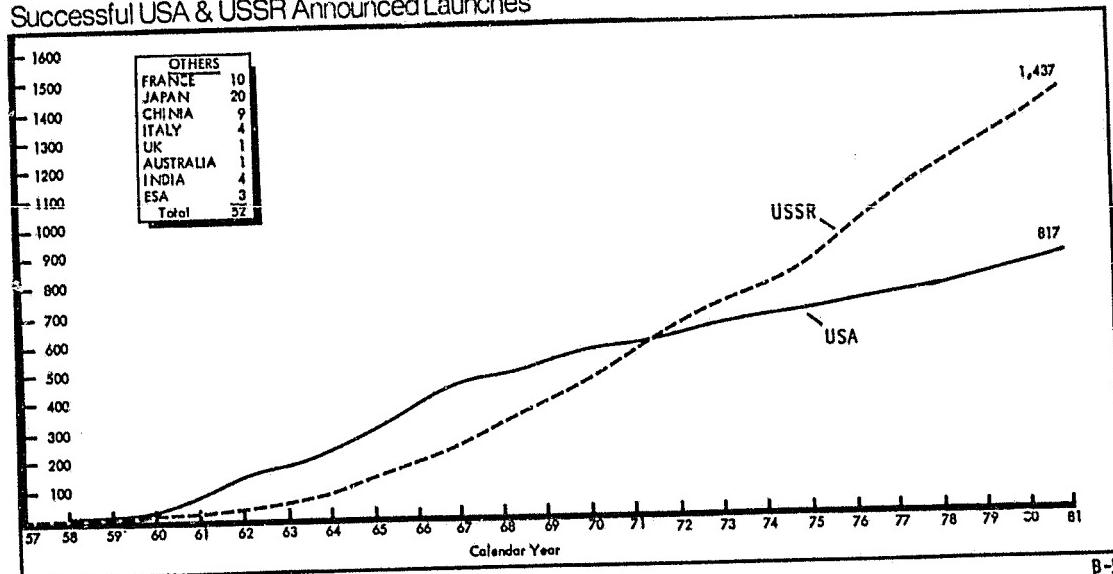
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Summary Of USA & USSR Announced Launches

	Calendar Year		NUMBER OF SUCCESSFUL LAUNCHES																						Total	
	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	
NASA	0	0	8	10	16	20	11	24	23	29	18	12	13	7	7	9	9	3	11	2	3	8	3	1	4	251
NASA/USA Gov't	0	0	0	0	0	0	2	1	1	4	3	3	1	1	1	2	2	1	2	3	2	2	3	3	4	41
NASA/Commercial	0	0	0	0	0	1	1	0	1	1	3	1	2	3	2	1	3	3	7	1	3	2	2	5	44	
NASA/International	0	0	0	0	0	2	0	2	1	0	2	3	4	2	6	5	1	8	3	4	7	7	1	0	0	58
TOTAL NASA	0	0	8	10	16	23	14	27	26	34	26	19	20	13	16	18	13	15	19	16	13	20	9	6	13	394
Air Force	0	1	5	8	16	31	24	31	34	39	27	25	18	16	17	13	10	8	9	11	10	13	7	6	5	384
Navy	0	1	0	2	3	3	4	4	5	4	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	33
Army	0	3	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
TOTAL DOD	0	5	5	11	19	24	29	35	40	43	32	26	19	17	17	13	10	8	9	11	10	13	7	6	5	423
TOTAL USA SUCCESSES	0	5	13	21	35	57	42	62	66	77	58	45	39	30	33	31	23	23	28	27	23	33	16	12	18	817
TOTAL USSR	2	1	3	3	6	20	17	30	48	44	66	74	70	81	83	74	86	81	89	99	98	88	87	89	98	1437
NUMBER OF UNSUCCESSFUL LAUNCHES (Not Included In numbers above)																										
NASA	0	4	6	7	8	4	1	3	4	2	1	3	1	1	1	1	0	0	1	1	0	0	0	0	0	48
NASA/USA Gov't	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
NASA/USA Commercial	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4
NASA/International	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	4
Total NASA Unsuccessful	0	4	6	7	8	4	1	3	4	2	2	4	2	1	2	0	1	2	2	0	3	0	0	1	0	59
Total DOD Unsuccessful	1	8	4	8	7	6	8	5	4	3	2	1	0	0	2	2	0	0	1	0	0	1	0	2	1	64

Successful USA & USSR Announced Launches



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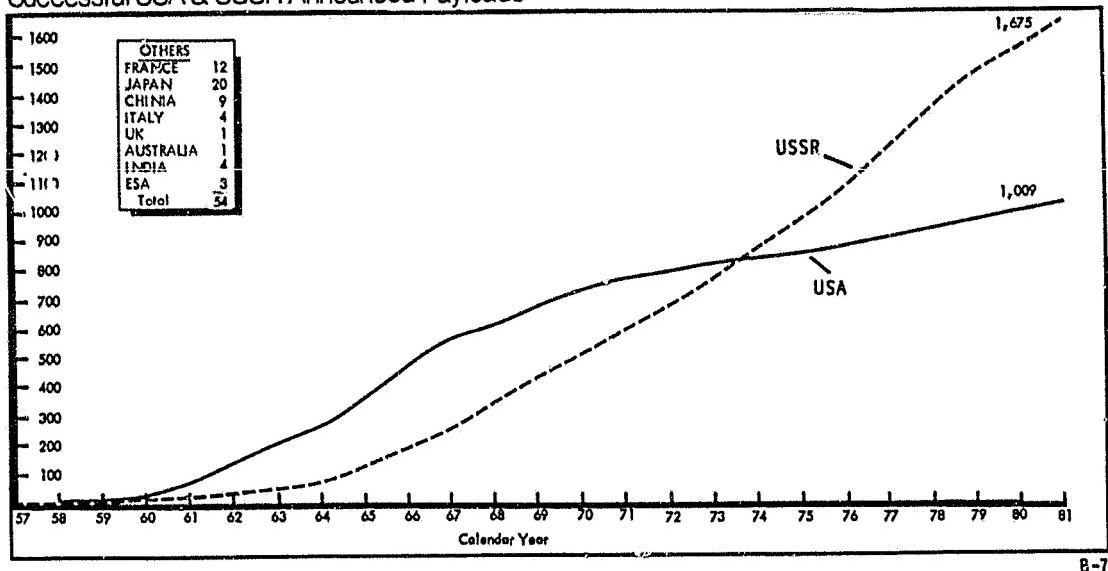
Summary Of USA & USSR Announced Payloads

	NUMBER OF SUCCESSFUL MISSIONS OR PAYLOADS																						Total				
	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81		
NASA	0	0	6	9	15	17	19	23	22	19	17	13	11	5	7	9	8	3	11	2	3	8	3	1	4	228	
NASA/USA Gov't	0	0	0	0	0	2	1	1	4	3	3	1	1	1	2	2	1	2	3	2	3	2	3	3	4	41	
NASA/ISA Commercial	0	0	0	0	0	1	1	0	1	0	3	1	2	2	2	1	3	3	7	1	3	1	2	5	41		
NASA/International	0	0	0	0	0	2	0	2	2	0	2	3	4	2	6	5	1	9	3	4	8	7	1	0	0	61	
TOTAL NASA	0	0	8	9	15	20	13	26	26	23	25	20	18	10	16	18	12	16	19	16	14	20	8	6	13	371	
Air Force	0	1	5	8	18	33	39	39	49	63	48	42	29	20	31	17	12	7	11	18	14	14	9	9	5	541	
Navy	0	1	0	3	7	7	10	11	15	4	12	1	10	1	0	0	0	1	0	0	0	0	0	0	0	0	83
Army	0	3	0	1	0	0	0	0	4	3	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	14	
TOTAL DOD	0	5	5	12	25	40	49	50	68	70	61	43	40	22	31	17	12	8	11	18	14	14	9	9	5	638	
TOTAL USA SUCCESSES	0	5	13	21	40	60	62	76	94	93	86	63	58	32	47	35	24	24	30	34	28	34	17	15	18	1009	
TOTAL USSR	2	1	3	3	6	20	17	35	64	44	66	74	70	88	97	89	107	95	111	121	105	120	102	110	125	1675	

NUMBER OF UNSUCCESSFUL MISSIONS OR PAYLOADS (Not included in numbers above)

g/ Subject to change as DOD payloads become unclassified.

Successful USA & USSR Announced Payloads



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Summary Of United States Manned Space Flight

MISSION	NO. OF ASTRONAUTS	MISSION DURATION	MAN-HOURS	MISSION	NO. OF ASTRONAUTS	MISSION DURATION	MAN-HOURS
<u>MERCURY REDSTONE:</u>							
<u>MR-3</u>	1	0:15	0:15	<u>APOLLO SATURN V:</u>	8	147:01	441:03
<u>MR-4</u>	1	0:16	0:16	9	3	241:01	723:03
Total 2	2	0:31	0:31	10	3	192:03	576:09
				11	3	195:19	585:57
				12	3	244:36	733:48
<u>MERCURY ATLAS:</u>				13	3	142:55	428:45
<u>MA-6</u>	1	4:55	4:55	14	3	216:02	648:06
<u>MA-7</u>	1	4:56	4:56	15	3	295:12	885:36
<u>MA-8</u>	1	9:13	9:13	16	3	265:51	797:33
Total 4	4	34:20	34:20	17	3	301:52	905:36
		53:24	53:24	Total 10	30	2241:52	6721:36
<u>GEMINI TITAN:</u>				<u>SKYLAB SL-I SATURN V:</u>			
<u>GT-3</u>	2	4:53	9:46	<u>SL-2 - Saturn IB:</u>	3	672:50	2018:30
<u>GT-4</u>	2	97:56	195:52	<u>SL-3 - Saturn IB:</u>	3	1427:09	4281:27
<u>GT-5</u>	2	190:55	381:50	<u>SL-4 - Saturn IB:</u>	3	2017:16	6051:48
<u>GT-7</u>	2	330:35	661:10	Total 3	9	4117:15	12,351:45
<u>GT-6A</u>	2	25:51	51:42	<u>APOLLO SATURN IB:</u>			
<u>GT-8</u>	2	10:41	21:22	<u>ASTP:</u>	3	217:28	652:24
<u>GT-9A</u>	2	72:21	144:42	Total 1	3	217:28	652:24
<u>GT-10</u>	2	70:47	141:34	<u>SPACE TRANS SYSTEM</u>			
<u>GT-11</u>	2	71:17	142:34	<u>STS-1 (Columbia)</u>	2	54:21	106:42
<u>GT-12</u>	2	94:35	189:10	<u>STS-2 (Columbia)</u>	2	54:13	106:26
Total 10	20	969:51	1939:42	Total 2	4	106:34	217:08
<u>APOLLO SATURN I:</u>				USA TOTAL	33	75	7,969:04
Total 1	3	260:09	780:27				22,720:57
	3	260:09	780:27				

Summary Of Soviet Union Manned Space Flight

MISSION	NO. OF COSMONAUTS	MISSION DURATION	MAN-HOURS	MISSION (Cont'd)	NO. OF COSMONAUTS	MISSION DURATION	MAN-HOURS
<u>VOSTOK:</u>			HRS., MINS.				
1	1	1:48	1:40	16	2	142:24	284:49
2		25:18	25:18	17	2	709:20	1416:40
3		94:25	94:25	18	2	151:20	:40
4		70:59	70:59	19 (ASTP)	2	142:31	285:02
5		119:06	119:05	21	2	1182:24	2364:48
6		70:50	70:50	22	2	169:54	379:48
Total 6	6	382:24	382:24	23	2	48:06	96:12
				24	2	425:23	850:46
				25	2	48:46	:97:02
<u>VOSKHOD:</u>				26	2	2314:00	4628:00
1	3	24:17	72:51	27	2	142:59	285:58
2	2	26:02	52:04	28	2	190:17	380:34
Total 2	5	50:19	124:55	29	2	3350:48	6701:36
<u>SOYUZ:</u>				30	2	190:04	380:08
1	1	26:37	26:37	31	2	188:49	377:38
2	1	94:51	94:51	32	2	4200:36	8401:12
3	1	71:23	71:23	33	2	47:01	94:02
*4	2			35	2	4436:12	8872:24
*5	1	72:56	72:56	36	2	188:46	377:32
6	2	118:42	117:24	T-2	2	94:41	189:22
7	3	118:41	35:07	37	2	188:42	377:24
8	2	118:50	237:40	38	2	188:43	377:26
9	2	424:59	849:58	T-3	3	307:08	921:24
10	3	47:46	143:18	T-4	2	1074:38	2149:16
11	3	570:22	171:06	39	2	188:43	377:26
12	2	47:16	94:32	40	2	188:41	377:22
13	2	188:55	377:50	Total 41	84	24,208:12	49,290:20
14	2	377:30	755:00	USSR Total 49	95	24,640:57	49,797:41
15	2	48:12	96:24				

*Crews exchanged spacecraft for re-entry

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NASA Record Of Performance (Scout & Larger Vehicles)

VEHICLE	TOTAL	SUCCESES	% SUCCESS	1980 TOTAL VEHICLE LAUNCH RECORD		
				ATTEMPTS	SUCCESES	% SUCCESS
Space Shuttle	2	2	100	Atlas Centaur	3	3
Mercury (Blue) Scout	1	0	0	Atlas-F	1	0
Juno II	10	4	40	Delta	3	3
Jupiter C	1	0	0	Scout	--	--
Thor-Able	5	3	60	TOTAL	7	6
Vanguard	4	1	25			
Atlas-Able	3	0	0			
Atlas 2A	11	9	82			
Thor	2	2	100			
Little Joe	7	7	100			
Little Joe II	5	4	80			
Scout X	1	0	0			
Scout	76*	69	91			
Radiotone	5	5	100			
Thor-Delta (Incl. TAD)	158	146	92			
Thor-Agena (Incl. TAT)	13	12	92			
Atlas-Agena & F	31	24	77			
Atlas-Centaur	58	50	86			
Saturn I	10	10	100			
Titan II	12	12	100			
Titan III C	1	1	100			
Titan III E Centaur	7	6	86			
Atlas X-259	2	2	100			
Gemini (A-A Target)	6	4	67			
Saturn IB	9	9	100			
Saturn V	13	12	92			
TOTAL	453	394	87			

1981 TOTAL VEHICLE LAUNCH RECORD		
Space Shuttle	2	2
Atlas Centaur	4	4
Atlas-F	1	1
Delta	5	5
Scout	1	1
TOTAL	13	13

Includes all launches (Little Joes, Scouts, and larger), funded by NASA or for which NASA has vehicle performance responsibility, including vehicle development missions.
*Excludes 26 DOD Scouts

1/ Does not include three successful launches of Jupiter C made prior to creation of NASA by projects transferred to NASA in October 1958.

2/ Includes Atlas vehicle for the Gemini ATDA.

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1981

NASA Major Launch Record

MISSION		DATE (GMT)		PERIOD (mins.)	ORBITAL PARAMETERS		WEIGHT (kg)	MISSION REMARKS	
Name	Design	Vehicle	Launch		Apoapsis (km)	Perigee (km)	Incl. ^o		
Comstar D 1981 018A		A-Centaur	21 Feb		GEOSYNCHRONOUS ORBIT		1516	Comsat Domestic Communications Satellite - Reimbursable	
STS-1 1981 034A		Shuttle (Columbia)	12 Apr	14 min	89.4	250	238	40.3	NA
NOVA-1 1981 044A		Scout	15 May		NO ELEMENTS AVAILABLE		167	US Navy Navigation Satellite - Reimbursable - WTR	
GOES-E 1981 049A		Delta	22 May		GEOSYNCHRONOUS ORBIT		837	Geosynchronous Operational Environmental Satellite for NOAA - Reimbursable	
Intelsat V-B 1981 050A		A-Centaur	23 May		GEOSYNCHRONOUS ORBIT		1928	Comsat Communications Satellite - Reimbursable	
NOAA-C 1981 059A		Atlas-F	23 Jun		GEOSYNCHRONOUS ORBIT		1405	NOAA Meteorological Satellite - Reimbursable - WTR	
DE-A & B 1981 070 A & B		Delta	3 Aug		437.9	24,775	672	90.0	403
FLTSATCOM-E 1981 073A		A-Centaur	6 Aug		97.8	999	303	90.0	415
SBS-B 1981 096A		Delta	24 Sep		GEOSYNCHRONOUS ORBIT		1876	Fleet Satellite Communications for DOD - Reimbursable	
SME 1981 100A		Delta	6 Oct		95.3	534	533	98.0	425
STS-2 1981 111A		Shuttle (Columbia)	12 Nov	14 Nov	88.9	229	219	38.0	2542
RCA-D 1981 114A		Delta	19 Nov		GEOSYNCHRONOUS ORBIT		1082	RCA Communication Satellite - Reimbursable	
Intelsat V F-3 1981 119A		A-Centaur	15 Dec		GEOSYNCHRONOUS ORBIT		1928	Comsat Communications Satellite - Reimbursable	

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**Total NASA Performance
By Major Program Activity**

(Excludes Reimbursables, Cooperatives
and Small Piggybacks)

	PROGRAM	VEHICLE		MISSION	
		SUCCESS/ ATTEMPTS	% SUCCESS	SUCCESS/ ATTEMPTS	% SUCCESS
Mercury	20/23	87%		18/23	78%
Gemini *	17/19	89%		10/14	71%
Apollo (Includes ASTP)	28/30	93%		27/30	90%
Skylab	4/4	100%		3/3	100%
STS	2/2	100%		2/2	100%
MANNED SPACE TOTAL	71/78	91%		60/72	83%
Geoprobe	4/4	100%		4/4	100%
Orbital Flights	62/77	81%		61/79	77%
Physics and Astronomy	66/81	81%		65/83	78%
Lunar Probes	19/28	68%		14/28	50%
Planetary and Deep Space	20/24	83%		20/24	83%
Lunar and Planetary	35/52	75%		34/52	65%
Bioscience	4/4	100%		2/4	50%
Launch Vehicle Development	8/13	62%		8/13	62%
SPACE SCIENCE TOTAL	117/150	78%		109/152	72%
Communications	13/16	81%		11/16	69%
Earth Observations	24/25	96%		24/25	96%
Special Applications	5/5	100%		5/5	100%
Applications Explorers	3/3	100%		3/3	100%
APPLICATIONS TOTAL	43/49	92%		43/49	87%
Suborbital	11/13	85%		10/13	77%
Orbital	7/9	78%		6/9	67%
SPACE TECHNOLOGY TOTAL	18/22	82%		16/22	73%
TOTAL NASA MISSIONS	251/299	84%		228/295	77%

*Does not include target vehicles

NASA REIMBURSABLE & COOPERATIVE LAUNCHES

(1958 - 1981)			
<u>COMMERCIAL</u>		<u>INTERNATIONAL</u>	
COMSAT	37	REIMBURSABLE LAUNCHES	34
AT&T	2	COOPERATIVE LAUNCHES	<u>28</u>
WESTERN UNION	3		
RCA	4		
SBS	<u>2</u>	TOTAL	62
TOTAL (ALL REIMBURSABLE)	48		
<u>U.S. GOVERNMENT</u>		<u>SUMMARY</u>	
DOD	15	COMMERCIAL	48
AEC	2	INTERNATIONAL	62
NRL	3	U.S. GOVERNMENT	<u>44</u>
ESSA	9		
NOAA	<u>15</u>		
TOTAL (INCLUDES 3 COOPERATIVES)	44	TOTAL (123 REIMBURSABLES & 31 COOPERATIVES)	154

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NASA/USA Government Cooperative & Reimbursable Launches

AGENCY/SPACECRAFT	VEHICLE	LAUNCH	DATE (GMT)	AGENCY/SPACECRAFT	VEHICLE	LAUNCH	DATE (GMT)
Atomic Energy Commission							
RFD-1 (Re-entry Test)	Scout		22 May 63				
RFD-2 (Re-entry Test)	Scout		9 Oct 64				
Naval Research Lab							
*Explorer XXX (Solar Physics)	Scout		19 Nov 65				
*Explorer XXXVII (Solar Physics)	Scout		5 Mar 68				
*Explorer 44 (Solar Physics)	Scout		8 Jul 71				
Department of Defense							
CRL (USAF)(Geophysics)	Scout		28 Jun 63				
OV-3 (USAF)(Radiation Research)	Scout		9 Jun 66				
TRANSIT (USN)	Scout		2 Sep 72				
TRANSIT (USN)	Scout		29 Oct 73				
TRANSIT (JN)	Scout		12 Oct 75				
USAF Test (Comm.,Research)	Scout		22 May 76				
TRANSIT (USN)	Scout		1 Sep 76				
TRANSAT (USN)	Scout		23 Oct 77				
FLTSATCOM A	A-Centaur		9 Feb 78				
BCATHA	Delta		30 Jan 79				
FLTSATCOM B	A-Centaur		4 May 79				
FLTSATCOM C	A-Centaur		17 Jan 80				
FLTSATCOM D	A-Centaur		31 Oct 80				
NOVA-1 (USN)	Scout		15 May 81				
FLTSATCOM E	A-Centaur		6 Aug 81				
Total Reimbursables..... 41				National Oceanic & Atmospheric Agency			
*Cooperatives..... 3				ITOS-A (NOAA-1)		11 Dec 70	
1/ Vehicle Failure				ITOS-B (NOAA)		21 Oct 71	
				ITOS-D (NOAA-2)		15 Oct 72	
				ITOS-E (NOAA)		16 Jul 73	
				ITOS-F (NOAA-3)		6 Nov 73	
				ITOS-G (NOAA-4)		15 Nov 74	
				SMS-C (GOES-1) (NOAA)		16 Oct 75	
				ITOS-H (NOAA-5)		29 Jul 76	
				GOES-2 (NOAA)		16 Jun 77	
				GOES-3 (NOAA)		16 Jun 78	
				NOAA-6		27 Jun 79	
				NOAA-7		29 May 80	
				GOES-4 (NOAA)		9 Sep 80	
				GOES-5 (NOAA)		22 May 81	
				NOAA-C		23 Jun 81	

NASA/USA Commercial Reimbursable Launches

SPACECRAFT	LAUNCH		SPACECRAFT	LAUNCH	
	VEHICLE	DATE (GMT)		VEHICLE	DATE (GMT)
AT&T			Comstar-A	Delta	22 Apr 76
Telstar	Thor-Delta	10 Jul 62	Comstar-B	Delta	22 Jul 76
Telstar	Thor-Delta	7 May 63	Marisat-A	Delta	19 Feb 76
-COMSAT			Marisat-B	Delta	9 Jun 76
Intelsat I F-1	Delta	6 Apr 65	Marisat-C	Delta	14 Oct 76
Intelsat II F-1 2/	Delta	26 Oct 66	Intelsat IVA F-4	A-Centaur	26 May 77
Intelsat II F-2	Delta	11 Jan 67	Intelsat IVA F-5	A-Centaur 1/	29 Sep 77
Intelsat II F-3	Delta	23 Mar 67	Intelsat IVA F-3	A-Centaur	7 Jan 78
Intelsat II F-4	Delta	28 Sep 67	Intelsat IVA F-6	A-Centaur	31 Mar 78
Intelsat III F-1	Delta 1/	19 Sep 68	Comstar D-3	A-Centaur	29 Jun 78
Intelsat III F-2	Delta	19 Dec 68	Intelsat V-A	A-Centaur	6 Dec 80
Intelsat III F-3	Delta	6 Feb 69	Comstar	A-Centaur	21 Feb 81
Intelsat III F-4	Delta	22 May 69	Intelsat V-B	A-Centaur	23 May 81
Intelsat III F-5	Delta 1/	26 Jul 69	Intelsat V-C	A-Centaur	15 Dec 81
Intelsat III F-6	Delta	15 Jan 70	Western Union		
Intelsat III F-7	Delta	23 Apr 70	Wester A	Delta	13 Apr 74
Intelsat III F-8 2/	Delta	23 Jul 70	Wester B	Delta	10 Oct 74
Intelsat IV F-2	A-Centaur	25 Jan 71	Wester C	Delta	9 Aug 75
Intelsat IV F-3	A-Centaur	19 Dec 71	RCA		
Intelsat IV F-4	A-Centaur	22 Jan 72	RCA-A	Delta	12 Dec 75
Intelsat IV F-5	A-Centaur	13 Jun 72	RCA-b	Delta	26 Mar 76
Intelsat IV F-7	A-Centaur	23 Aug 73	RCA-C 2/	Delta	6 Dec 79
Intelsat IV F-8	A-Centaur	21 Nov 74	RCA-D	Delta	19 Nov 81
Intelsat IV F-6	A-Centaur	20 Feb 75	SBS		
Intelsat IV F-1	A-Centaur 1/	22 May 75	SBS-A	Delta	15 Nov 80
Intelsat IVA F-1	A-Centaur	25 Sep 75	SBS-B	Delta	24 Sep 81
Intelsat IVA F-2	A-Centaur	29 Jan 76	1/ VEHICLE FAILURE	Total Launches	- - - - - 48
			2/ SPACECRAFT FAILURE	Total Successful Launches	- - - - 44
				Total Successful Payloads	- - - - 41

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NASA/International Cooperative & Reimbursable Launches

YEAR	SPACECRAFT TITLE	LAUNCH		YEAR	SPACECRAFT TITLE	LAUNCH	
		VEHICLE	DATE(GMT)			VEHICLE	DATE (GMT)
1962	ARIEL-I (United Kingdom) ALOUETTE -I (Canada)	DELTA THOR-AGENA-B	26 Apr 29 Sep	1971	*NATO-B (NATOSAT-II) ISIS-B (Canada) SAN MARCO (C) (Italy) CASEOLE-A (France) BARIUM ION CLOUD (Germany) UK-4 (United Kingdom)	DELTA DELTA SCOUT SCOUT SCOUT SCOUT	2 Feb 31 Mar 24 Apr 16 Aug 20 Sep 11 Dec
1964	ARIEL-II (United Kingdom) SAN MARCO-I (Italy)	SCOUT SCOUT	27 Mar 15 Dec	1972	*ESRO (HEOS A-2) *ESRO (TD-1) *TELESAT-A (ANIK-1) (Canada) *ESRO-IV German A-2 (AEROS)	DELTA DELTA DELTA SCOUT SCOUT	31 Jan 12 Mar 9 Nov 21 Nov 16 Dec
1965	ALOUETTE - II (Canada) (Piggyback on Explorer XXXI) FRENCH IA (France)	NA SCOUT	29 Nov 6 Dec	1973	*TELESAT B (ANIK-2) (Canada)	DELTA	20 Apr
1967	SAN MARCO 2 (Italy) ARIEL-III (United Kingdom) ESRO-IIA	SCOUT SCOUT SCOUT 1/	26 Apr 5 May 29 May	1974	*SKYNET II A (United Kingdom) SAN MARCO C-2 (Italy) *UK-X4 (United Kingdom) *AEROS-B (Germany) ANS-A (Netherlands) UK-5/AERIEL 5 (United Kingdom) INTASAT (Spain-Piggyback on ITOS-G) *SKYNET II-B (United Kingdom) HELIOS-A (Germany) *SYMPHONIE-A (France-Germany)	DELTA SCOUT SCOUT SCOUT SCOUT SCOUT NA	19 Jan 18 Feb 8 Mar 16 Jul 30 Aug 15 Oct 15 Nov
1968	ESRO-IIIB (IRIS) ESRO-IA (Aurorae) *ESRO (HEOS-A)	SCOUT SCOUT DELTA	17 May 3 Oct 5 Dec		DELTA TITAN III E CENTAUR DELTA	22 Nov 10 Dec 18 Dec	
1969	ISIS-I (Canada) *ESRO-IB (Boros) AZUR-I (German) (GRS-A) SKYNET-1 (United Kingdom)	DELTA SCOUT SCOUT DELTA	30 Jan 1 Oct 8 Nov 22 Nov				
1970	*SKYNET-2 (United Kingdom) *NATO-A (NATOSAT-1)	DELTA DELTA	19 Aug 20 Mar				

1/ Vehicle failure *Reimbursable Launches

NASA/International Cooperative & Reimbursable Launches

(SCOUT AND LARGER VEHICLES)

YEAR	SPACECRAFT TITLE	LAUNCH		YEAR	SPACECRAFT TITLE	LAUNCH	
		VEHICLE	DATE (GMT)			VEHICLE	DATE (GMT)
1975	*TELESAT C (Canada)	Delta	7 May	1979	*UK-6 (United Kingdom)	Scout	2 Jun 79
	*COS-B (ESA)	Delta	8 Aug				
	*SYMPHONIE-B (France-Germany)	Delta	26 Aug				
1976	Helios-B (Germany)	T-III-Centaur	15 Jan				
	CAS-CTS (Canada)	Delta	17 Jan				
	*NATO III-A	Delta	22 Apr				
	*Palapa-A (Indonesia)	A-Centaur	13 May				
1977	*NATO III-B	Delta	27 Jan				
	*Palapa-B (Indonesia)	Delta	10 Mar				
	*GEOS (ESA)	Delta 1/	20 Apr				
	*GMS (Japan)	Delta	14 Jul				
	*SIRIO (Italy)	Delta	25 Aug				
	*OTS (ESA)	Delta 1/	13 Sep				
	ISEE A/B (ESA-Dual Payload)	Delta	22 Oct				
	*METEOSAT (ESA)	Delta	22 Nov				
	*CS (Japan)	Delta	14 Dec				
	IUE-A (ESA)	Delta	26 Jan				
	*BSE (Japan)	Delta	7 Apr				
1978	*OTS-B (ESA)	Delta	11 May				
	*GEOS-B (ESA)	Delta	14 Jul				
	ISEE-C (ESA)	Delta	12 Aug				
	*NATO-III C	Delta	19 Nov				
	*Teletat (Canada)	Delta	16 Dec				

*Reimbursable Launches 1/ Vehicle Failure

Total Cooperatives.....	28
Total Reimbursables.....	34
Total Launches.....	62
Total Successful Launches.....	58
Total Successful Payloads.....	61 9/

9/ Includes 1 Dual Payload & 2 Piggybacks

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Summary Of
Manned Space Flight
Mission Performance
By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
MERCURY PROGRAM				
Suborbital Flights				
Big Joe	5 Sep 59	Atlas	S	S
Little Joe-1 - Vehicle Test	4 Oct 59	Little Joe-6	S	S
Little Joe-2	4 Nov 59	Little Joe-1A	S	S
Little Joe-3	4 Dec 59	Little Joe-2	S	S
Little Joe-4	21 Jan 60	Little Joe-1B	S	S
Mercury (MA-1)	29 Jul 60	Atlas	U	U
Little Joe-5	8 Nov 60	Little Joe-5	S	U
Mercury (MR-1A)	19 Dec 60	Redstone	S	S
Mercury (MR-2)	31 Jan 61	Redstone	S	S
Mercury (MA-2)	21 Feb 61	Atlas	S	S
Little Joe-5A	18 Mar 61	Little Joe-5A	S	U
Mercury (MR-BD) - Vehicle Test	24 Mar 61	Redstone	S	S
Little Joe-5B	28 Apr 61	Little Joe-5B*	S	S
Freedom 7 - (MR-3) (Manned)	5 May 61	Redstone	S	S
Liberty Bell-7 (MR-4) (Manned)	21 Jul 61	Redstone	S	S
TOTAL (Success/Attempts)			14/15	12/15
Orbital Flights				
Mercury (MA-3)	25 Apr 61	Atlas	U	U
Mercury (MA-4)	13 Sep 61	Atlas	S	S
Mercury (MS-1)	1 Nov 61	(Mercury Blue Scout)	U	U
Mercury (MA-5)	29 Nov 61	Atlas	S	S
Friendship 7 (MA-6) (Manned)	20 Feb 62	Atlas	S	S
Aurora 7 (MA-7) (Manned)	24 May 62	Atlas	S	S
Sigma 7 (MA-8) (Manned)	3 Oct 62	Atlas	S	S
Faith 7 (MA-9) (Manned)	15 May 63	Atlas	S	S
TOTAL (Success/Attempts)			6/8	6/8

Summary Of
Manned Space Flight
Mission Performance
By Program Activities

MISSION		LAUNCH		ASSESSMENT	
		DATE	VEHICLE	VEHICLE	MISSION
<u>GEMINI PROGRAM (Suborbital Flights)</u>					
<u>Gemini II</u>		19 Jan 65	Titan II	S	S
<u>Orbital Flights</u>				1/1	1/1
<u>Gemini I</u>		8 Apr 64	Titan II	S	S
<u>Gemini III (Manned)</u>		23 Mar 65	Titan II	S	S
<u>Gemini IV (Manned)</u>		3 Jun 65	Titan II	S	S
<u>Gemini V (Manned)</u>		21 Aug 65	Titan II	S	S
<u>Gemini VI</u>		25 Oct 65	Atlas-Agena	U	U
<u>Gemini VII (Manned)</u>		4 Dec 65	Titan II	S	S
<u>Gemini VI-A (Manned)</u>		15 Dec 65	Titan II	S	S
<u>Gemini VIII (Manned)</u>		16 Mar 66	Atlas-Agena/Titan II	S/S	U
<u>Gemini IX</u>		17 May 66	Atlas-Agena	U	U
<u>Gemini IX-A (Manned)</u>		1 Jun 66	Atlas/Titan II	S/S	U
<u>Gemini X (Manned)</u>		18 Jul 66	Atlas-Agena/Titan II	S/S	S
<u>Gemini XI (Manned)</u>		12 Sep 66	Atlas-Agena/Titan II	S/S	S
<u>Gemini XII (Manned)</u>		11 Nov 66	Atlas-Agena/Titan II	S/S	S
<u>TOTAL (Success/Attempts)</u>				16/18	9/13
<u>APOLLO PROGRAM (Suborbital Flights)</u>					
<u>Saturn Test (SA-1)</u>		27 Oct 61	*Saturn I	S	S
<u>Saturn (SA-2)</u>		25 Apr 62	*Saturn I	S	S
<u>Saturn (SA-3)</u>		16 Nov 62	*Saturn I	S	S
<u>Saturn (SA-4)</u>		28 Mar 63	*Saturn I	S	S
<u>Little Joe II #1</u>		28 Aug 63	*Little Joe II	S	S
<u>Apollo Transonic Abort</u>		13 May 64	*Little Joe II	S	S
<u>Apollo Max Q Abort</u>		8 Dec 64	*Little Joe II	S	S
<u>High Altitude Abort</u>		19 May 65	*Little Joe II	U	U
<u>Intermediate Altitude Abort</u>		20 Jan 66	*Little Joe II #5	S	S
<u>Saturn (AS-201)</u>		26 Feb 66	*Updated Saturn I	S	S
<u>Saturn (AS-202)</u>		25 Aug 66	*Updated Saturn I	S	S
<u>TOTAL (Success/Attempts)</u>				10/11	10/11

*Launch Vehicle Development

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Summary Of
Manned Space Flight
Mission Performance
By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
APOLLO PROGRAM (Cont'd)				
Orbital Flight				
Saturn (SA-5)	29 Jan 64	*Saturn I	S	S
Saturn (SA-6)	28 May 64	*Saturn I	S	S
Saturn (SA-7)	18 Sep 64	*Saturn I	S	S
Saturn (AS-203)	5 Jul 66	*Upgraded Saturn I	S	S
Apollo 4 (501/017)	9 Nov 67	Saturn V	S	S
Apollo 5 (204/LM-1)	22 Jan 68	Saturn IB	U	U
Apollo 6 (502/CSM-020/LTA-2R)	4 Apr 68	*Saturn V	S	S
Apollo 7 (205/CSM-101) (Manned)	11 Oct 68	Saturn IB	S	S
Apollo 8 (503/CSM-103/LTA-8) (Manned)	21 Dec 68	Saturn V	S	S
Apollo 9 (504/CSM-104/LM-3) (Manned)	3 Mar 69	Saturn V	S	S
Apollo 10 (505/CSM-106/LM-4) (Manned)	18 May 69	Saturn V	S	S
Apollo 11 (506/CSM-107/LM-5) (Manned)	16 Jul 69	Saturn V	S	S
Apollo 12 (507/CSM-108/LM-6) (Manned)	14 Nov 69	Saturn V	S	S
Apollo 13 (508/CSM-109/LM-7) (Manned)	11 Apr 70	Saturn V	S	U
Apollo 14 (509/CSM-110/LM-8) (Manned)	31 Jan 71	Saturn V	S	S
Apollo 15 (510/CSM-112/LM-10) (Manned)	26 Jul 71	Saturn V	S	S
Apollo 16 (511/CSM-113/LM-11) (Manned)	16 Apr 72	Saturn V	S	S
Apollo 17 (512/CSM-114/LM-12) (Manned)	7 Dec 72	Saturn V	S	S
Apollo (ASTP)	15 Jul 75	Saturn IB	S	S
TOTAL (Success/Attempts)			18/19	17/19
SKYLAB PROGRAM				
Workshop SL-1 (S13/S-IVB 212)	14 May 73	Saturn V	S	S
First Manned Visit SL-2 (206/CSM-116)	25 May 73	Saturn IB	S	S
Second Manned Visit SL-3 (207/CSM-117)	28 Jul 73	Saturn IB	S	S
Third Manned Visit SL-4 (208/CSM-118)	16 Nov 73	Saturn IB	S	S
TOTAL (Success/Attempts)			4/4	3/3

*Launch Vehicle Development

Summary Of
Manned Space Flight
Mission Performance
By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
SPACE TRANSPORTATION SYSTEM <u>Orbital Flight Test Program</u>				
STS-1	12 Apr 81	Columbia	S	S
STS-2	12 Nov 81	Columbia	S	S
TOTAL (Success/Attempts)	-----	2/2	-----	2/2

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	MISSION	LAUNCH		ASSESSMENT	
		DATE	VEHICLE	VEHICLE	MISSION
<u>BIOSCIENCE - ORBITAL FLIGHTS</u>					
Summary Of Space Science Flight Mission Performance By Program Activities	Biosatellite I (A)	14 Dec 66	Thor-Delta	S	U
	Biosatellite II (B)	7 Sep 67	Thor-Delta	S	S
	Biosatellite III (D)	29 Jun 69	Thor-Delta	S	U
	OFO-I (A)	9 Nov 70	Scout	S	S
<u>TOTAL (Success/Attempts)</u>				2/4	2/4
<u>LAUNCH VEHICLE DEVELOPMENT</u>					
<u>Sub-Orbital Flights</u>	Scout X	18 Apr 60	Scout X	U	U
	Scout	1 Jul 60	Scout	S	S
	Scout	4 Oct 60	Scout	S	S
	Centaur Test (AC-1)	8 May 62	Atlas-Centaur	U	U
	Centaur (AC-3)	30 Jun 64	Atlas-Centaur	S	S
	Centaur (AC-4)	11 Dec 64	Atlas-Centaur	S	S
	<u>TOTAL (Success/Attempts)</u>			4/6	4/6
	Orbital Flights				
	Centaur (AC-2)	27 Nov 63	Atlas-Centaur	S	S
	Centaur (AC-5)	2 Mar 65	Atlas-Centaur	U	U
	Scout Evaluation Vehicle A	10 Aug 65	Scout	S	S
	Centaur (AC-6)	11 Aug 65	Atlas-Centaur	-	S
	Centaur (AC-8)	8 Apr 66	Atlas-Centaur	U	U
	Centaur (AC-9)	26 Oct 66	Atlas-Centaur	S	S
	Centaur Proof Flight	11 Feb 74	Titan III E-Centaur	U	U
	<u>TOTAL (Success/Attempts)</u>			4/7	4/7

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	MISSION	LAUNCH		ASSESSMENT	
		DATE	VEHICLE	VEHICLE	MISSION
PHYSICS AND ASTRONOMY					
Summary Of Space Science Flight Mission Performance By Program Activities	Geoprobe				
	Explorer 10 (P-14) (Atmosphere Physics)	25 Mar 61	Thor-Delta	S	S
	Probe A (P-21) (Scientific Geoprobe)	19 Oct 61	Scout	S	S
	P-21a (Scientific Geoprobe)	29 Mar 62	Scout	S	S
	Gravity Probe (Gravity Measurements)	18 Jul 76	Scout	S	S
	TOTAL (Success/Attempts)			4/4	4/4
	Orbital Flights				
	Beacon 1 (Atmosphere Physics)	23 Oct 58	Jupiter C	U	U
	Beacon 2 (Atmosphere Physics)	14 Aug 59	Juno II	U	U
	Beacon A (S-66) (Atmosphere Physics)	19 Mar 64	Thor-Delta	U	U
	TOTAL (Success/Attempts)			0/3	0/3
	Vanguard II (Meteorology)	17 Feb 59	Vanguard (SLV-4)	U	U
	Vanguard (Atmosphere Physics)	13 Apr 59	Vanguard (SLV-5)	U	U
	Vanguard (Solar-Earth Heating)	22 Jun 59	Vanguard (SLV-6)	U	U
	Vanguard III (Magnetic Fields)	18 Sep 59	Vanguard (SLV-7)	S	S
	TOTAL (Success/Attempts)			1/4	1/4
	Explorer (S-1) (Energetic Particles)	16 Jul 59	Juno II	U	U
	Explorer 6 (S-2) (Meteorology)	7 Aug 59	Thor-Able	S	S
	Explorer 7 (S-1a) (Energetic Particles)	13 Oct 59	Juno II	S	S
	Explorer (S-46) (Energetic Particles)	23 Mar 60	Juno II	S	S
	Explorer 8 (S-30) (Atmosphere Physics)	3 Nov 60	Juno II	S	S
	Explorer (S-56) Atmosphere Physics)	4 Dec 60	Scout	U	U
	Explorer 9 (S-56a) (Atmosphere Physics)	16 Feb 61	Scout	S	S
	Explorer (S-45) (Atmosphere Physics)	24 Feb 61	Juno II	U	U
	Explorer 11 (S-13) (Gamma-ray Astronomy)	27 Apr 61	Juno II	S	S
	Explorer (S-45a) (Atmosphere Physics)	24 May 61	Juno II	U	U

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Summary Of
Space Science
Flight Mission Performance
By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
<u>PHYSICS AND ASTRONOMY (Cont'd)</u>				
<u>Orbital Flights (Cont'd)</u>				
Explorer 12 (S-3) (Atmosphere Physics)	16 Aug 61	Thor-Delta	S	S
Explorer 14 (S-3c) (Atmosphere Physics)	2 Oct 62	Thor-Delta	S	S
Explorer 15 (S-3b) (Atmosphere Physics)	27 Oct 62	Thor-Delta	S	S
Explorer 17 (S-6) (Aeronomy)	2 Apr 63	Thor-Delta	S	S
Explorer 18 (IMP-A)	26 Nov 63	Thor-Delta	S	S
Explorer 19 (AD-A) (Atmosphere Physics)	19 Dec 63	Scout	S	S
Explorer 20 (S-48) (Atmosphere Physics)	25 Aug 64	Scout	S	S
Explorer 21 (IMP-B)	4 Oct 64	Thor-Delta	U	U
Explorer 22 (BE-B) (Geodesy)	10 Oct 64	Scout	S	S
Explorer 24 (Air Density) { Dual Mission	21 Nov 64	Scout	-	S
Explorer 25 (Injun B)	21 Dec 64	Thor-Delta	S	S
Explorer 26 (S-3C) (Atmosphere Physics)	29 Apr 65	Scout	S	S
Explorer 27 (BE-C) (Geodesy)	29 May 65	Thor-Delta	S	S
Explorer 28 (IMP-C)	6 Nov 65	Thor-Delta	S	S
Explorer 29 (GEOS)	29 Nov 65	Thor-Delta	S	S
Explorer 31 (DME-A)	25 May 66	Thor-Delta	S	S
Explorer 32 (AE-B)	1 Jul 66	Thor-Delta	S	S
Explorer 33 (IMP-D)	24 May 67	Thor-Delta	S	S
Explorer 34 (IMP-F)	19 Jul 67	Thor-Delta	S	S
Explorer 35 (IMP-E)	4 Jul 68	Thor-Delta	S	S
Explorer 38 (RAE-A)	8 Aug 68	Scout	S	S
Explorer 39 (Air Density) { Dual Mission	21 Jun 69	Thor-Delta	S	S
Explorer 40 (Injun V)	12 Dec 70	Scout	S	S
Explorer 41 (IMP-G)	13 Mar 71	Delta	S	S
Explorer 42 (SAS-A)				
Explorer 43 (IMP-I)				

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	MISSION	LAUNCH		ASSESSMENT	
		DATE	VEHICLE	VEHICLE	MISSION
PHYSICS AND ASTRONOMY (Cont'd)					
Summary Of Space Science Flight Mission Performance By Program Activities	Orbital Flights (Cont'd)				
	Explorer 45 (SSS-A)	15 Nov 71	Scout	S	S
	Explorer 47 (IMP-H)	22 Sep 72	Delta	S	S
	Explorer 48 (SAS-B)	10 May 72	Scout	S	S
	Explorer 49 (RAE-B)	10 Jun 73	Delta	S	S
	Explorer 50 (IMP-J)	25 Oct 73	Delta	S	S
	Explorer 51 (AE-C)	14 Dec 73	Delta	S	S
	Explorer 52 (Hawkeye-1)	3 Jun 74	Scout	S	S
	Explorer 53 (SAS-C)	7 May 75	Scout	S	S
	Explorer 54 (AE-D)	6 Oct 75	Delta	S	S
	Explorer 55 (AE-E)	19 Nov 75	Delta	S	S
	Explorer (DAD-A/B)	5 Dec 75	Scout	S	S
	Dynamics Explorer A/B	3 Aug 81	Delta	S	S
	Solar Mesosphere Explorer	6 Oct 81	Delta	S	S
TOTAL (Success/Attempts)				40/47	42/49
HIGH ENERGY ASTRONOMY OBSERVATORY					
	HEAO-A	12 Aug 77	A-Centaur	S	S
	HEAO-B	13 Nov 78	A-Centaur	S	S
	HEAO-C	20 Sep 79	A-Centaur	S	S
TOTAL (Success/Attempts)				3/3	3/3
SOLAR MAXIMUM MISSION					
	SMM-A	14 Feb 80	Delta	S	S
	TOTAL (Success/Attempts)			1/1	1/1

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	MISSION	LAUNCH		ASSESSMENT	
		DATE	VEHICLE	VEHICLE	MISSION
<u>PHYSICS AND ASTRONOMY (Cont'd)</u>					
Summary Of Space Science Flight Mission Performance	<u>Orbiting Geophysical Observatory</u> OGO-I (A) (EGO) OGO-II (C) (POGO) OGO-III (B) (EGO) OGO-IV (D) (POGO) OGO-V (E) OGO-VI (F)	5 Sep 64 14 Oct 65 7 Jun 66 28 Jul 67 4 Mar 68 5 Jun 69	Atlas-Agena Thor-Agena Atlas-Agena Thor-Agena Atlas-Agena Thor-Agena	S S S S S S	U U S S S S
	TOTAL (Success/Attempt)			6/6	4/6
By Program Activities	<u>Orbiting Solar Observatory</u> OSO-1 (S-16) OSO-2 (B-2) OSO-C OSO-3 (E) OSO-4 (D) OSO-5 (F) OSO-6 (G) OSO-7 (H) OSO-8 (I)	7 Mar 62 3 Feb 65 25 Aug 65 8 Mar 67 18 Oct 67 22 Jan 69 9 Aug 69 29 Sep 71 21 Jun 75	Thor-Delta Thor-Delta Thor-Delta Thor-Delta Thor-Delta Thor-Delta Thor-Delta Thor-Delta Delta	S S S U S S S S S	S S S S S S S S S
	TOTAL (Success/Attempt)			8/9	8/9
	<u>Orbiting Astronomical Observatory</u> OAO-I (A) OAO-II (A2) OAO-8 OAO-C	8 Apr 66 7 Dec 68 30 Nov 70 21 Aug 72	Atlas-Agena Atlas-Centaur Atlas-Centaur Atlas-Centaur	S S S S	U U U U
	TOTAL (Success/Attempt)			3/4	2/4

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Summary Of
Space Science
Flight Mission Performance
By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
LUNAR & PLANETARY				
Ranger I (P-32)	23 Aug 61	Atlas-Agena	U	U
Ranger II (P-33)	18 Nov 61	Atlas-Agena	U	U
Ranger III (P-34)	26 Jan 62	Atlas-Agena	S	U
Zenith IV (P-35)	23 Apr 62	Atlas-Agena	S	U
Ranger V (P-36)	18 Oct 62	Atlas-Agena	S	U
Ranger VI (A)	30 Jan 64	Atlas-Agena	S	S
Ranger VII (B)	28 Jul 64	Atlas-Agena	S	S
Ranger VIII (C)	17 Feb 65	Atlas-Agena	S	S
Ranger IX (D)	21 Mar 65	Atlas-Agena	S	S
TOTAL (Success/Attempts)			6/9	3/9
Lunar Orbiter I (A)	10 Aug 66	Atlas-Agena	S	S
Lunar Orbiter II (B)	6 Nov 66	Atlas-Agena	S	S
Lunar Orbiter III (C)	5 Feb 67	Atlas-Agena	S	S
Lunar Orbiter IV (D)	4 May 67	Atlas-Agena	S	S
Lunar Orbiter V (E)	1 Aug 67	Atlas-Agena	S	S
TOTAL (Success/Attempts)			5/5	5/5
Surveyor I (A)	30 May 66	Atlas-Centaur	S	S
Surveyor II (B)	20 Sep 66	Atlas-Centaur	S	U
Surveyor III (C)	17 Apr 67	Atlas-Centaur	S	S
Surveyor IV (D)	14 Jul 67	Atlas-Centaur	S	S
Surveyor V (E)	8 Sep 67	Atlas-Centaur	S	S
Surveyor VI (F)	7 Nov 67	Atlas-Centaur	S	S
Surveyor VII (G)	7 Jan 68	Atlas-Centaur	S	S
TOTAL (Success/Attempts)			7/7	5/7

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Summary Of
Space Science
Flight Mission Performance
By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
LUNAR AND PLANETARY				
Pioneer I (Lunar)	11 Oct 58	Thor-Able I	U	U
Pioneer II (Lunar)	8 Nov 58	Thor-Able I	U	U
Pioneer III (Lunar)	6 Dec 58	Juno-II	S	S
Pioneer IV (Lunar)	3 Mar 59	Juno-II	S	S
Pioneer (P-3) (Lunar)	26 Nov 59	Atlas-Able	S	S
*Pioneer V (P-2)	11 Mar 60	Thor-Able IV	S	S
Pioneer (P-30) (Lunar)	25 Sep 60	Atlas-Able	U	U
Pioneer (P-31) (Lunar)	15 Dec 60	Atlas-Able	S	S
*Pioneer VI (A)	16 Dec 65	TAD	S	S
*Pioneer VII (B)	17 Aug 66	Delta	S	S
*Pioneer VIII (C)	13 Dec 67	Delta	S	S
*Pioneer IX (D)	8 Nov 68	Delta	S	S
*Pioneer E	27 Aug 69	Delta	U	U
Pioneer X (F) (Jupiter Flyby)	3 Mar 72	A-Centaur	S	S
Pioneer XI (G) (Jupiter Flyby)	6 Apr 73	A-Centaur	S	S
Pioneer/Venus-A	20 May 78	A-Centaur	S	S
Pioneer/Venus-B	8 Aug 78	A-Centaur	S	S
TOTAL (Success/Attempts)			10/17	10/17
*Deep Space Probe				

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**Summary Of
Space Science
Flight Mission Performance
By Program Activities**

	MISSION	LAUNCH		ASSESSMENT	
		DATE	VEHICLE	VEHICLE	MISSION
<u>LUNAR AND PLANETARY</u>					
Mariner I (P-37) (Venus Probe-Failed)	22 Jul 62	Atlas-Agena	U	U	
Mariner II (P-38) (Venus Flyby)	27 Aug 62	Atlas-Agena	S	U	
Mariner III (C) (Mars Probe-Failed)	5 Nov 64	Atlas-Agena	S	S	
Mariner IV (D) (Mars Flyby)	28 Nov 64	Atlas-Agena	S	S	
Mariner V (E) (Venus Flyby)	14 Jun 67	Atlas-Agena	S	S	
Mariner VI (F) (Mars Flyby)	25 Feb 69	Atlas-Centaur	S	S	
Mariner VII (G) (Mars Flyby)	27 Mar 69	Atlas-Centaur	S	S	
Mariner VIII (H) (Mars Orbiter -Failed)	8 May 71	Atlas-Centaur	U	U	
Mariner IX (I) (Mars Orbiter)	30 May 71	Atlas-Centaur	S	S	
Mariner X (J) (Venus/Mercury Flyby)	3 Nov 73	Atlas-Centaur	S	S	
TOTAL (Success/Attempts)			7/10	7/10	
Viking 1 (A) (Mars Lander & Orbiter)	20 Aug 75	Titan III Centaur	S	S	
Viking 2 (B) (Mars Lander & Orbiter)	9 Sep 75	Titan III Centaur	S	S	
TOTAL (Success/Attempts)			2/2	2/2	
Voyager 2 (Jupiter/Saturn Flyby)	20 Aug 77	Titan III Centaur	S	S	
Voyager 1 (Jupiter/Saturn Flyby)	5 Sep 77	Titan III Centaur	S	S	
TOTAL (Success/Attempts)			2/2	2/2	

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	MISSION	LAUNCH		ASSESSMENT	
		DATE	VEHICLE	VEHICLE	MISSION
COMMUNICATIONS PROGRAM					
Summary Of Communications Flight Mission Performance By Program Activities	Suborbital Flights				
	Echo (AVT-1)	15 Jan 62	Thor	S	S
	Echo (AVT-2)	18 Jul 62	Thor	S	S
	TOTAL (Success/Attempts)			2/2	2/2
	Orbital Flights				
	Echo (A-10)	13 May 60	Thor-Delta	U	U
	Echo I (A-11)	12 Aug 60	Thor-Delta	S	S
	Echo II (A-12)	25 Jan 64	Thor-Agena	S	S
	Relay I (A-15)	13 Dec 62	Thor-Delta	S	S
	Relay II (A-16)	21 Jan 64	Thor-Delta	S	S
	Syncom I (A-25)	14 Feb 63	Thor-Delta	S	U
	Syncom II (A-26)	26 Jul 63	Thor-Delta	S	S
	Syncom III (A-27)	19 Aug 64	Thor-Delta	S	S
	TOTAL (Success/Attempts)			7/8	6/8
Applications Technology Satellites					
	ATS-I (B)	6 Dec 66	Atlas-Agena	S	S
	ATS-II (A)	6 Apr 67	Atlas-Agena	U	U
	ATS-III (C)	5 Nov 67	Atlas-Agena	S	S
	ATS-IV (D)	10 Aug 68	Atlas-Centaur	U	U
	ATS-V (E)	12 Aug 69	Atlas-Centaur	S	U
	ATS-VI (F)	30 May 74	Titan III C	S	S
	TOTAL (Success/Attempts)			4/6	3/6

**Summary Of
Earth Observations
Flight Mission Performance**

By Program Activities

	MISSION	LAUNCH		ASSESSMENT	
		DATE	VEHICLE	VEHICLE	MISSION
EARTH OBSERVATIONS PROGRAM					
Tiros I (A-1)	1 Apr 60	Thor-Able	S	S	
Tiros II (A-2)	23 Nov 60	Thor-Delta	S	S	
Tiros III (A-3)	12 Jul 61	Thor-Delta	S	S	
Tiros IV (A-9)	8 Feb 62	Thor-Delta	S	S	
Tiros V (A-50)	19 Jun 62	Thor-Delta	S	S	
Tiros VI (A-51)	18 Sep 62	Thor-Delta	S	S	
Tiros VII (A-52)	19 Jun 63	Thor-Delta	S	S	
Tiros VIII (A-53)	21 Dec 63	Thor-Delta	S	S	
Tiros IX (I EYE)	22 Jan 65	Thor-Delta	S	S	
Tiros X (OT-1)	2 Jul 65	Thor-Delta	S	S	
Tiros M (ITOS-1)	23 Jan 70	Thor-Delta	S	S	
Tiros N	13 Oct 78	Atlas-F	S	S	
TOTAL (Success/Attempts)				12/12	12/12
Nimbus I (A)	23 Aug 64	Thor-Agena	S	S	
Nimbus II (C)	15 May 66	Thor-Agena	S	S	
Nimbus B	18 May 68	Thor-Agena	U	U	
Nimbus III (B-2)	14 Apr 69	Thor-D-Agena	S	S	
Nimbus D (4)	8 Apr 70	Thor-Agena	S	S	
Nimbus E (5)	11 Dec 72	Delta	S	S	
Nimbus F (6)	12 Jun 75	Delta	S	S	
Nimbus G (7)	14 Oct 78	Delta	S	S	
TOTAL (Success/Attempts)				7/8	7/8

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Summary Of Special Applications Flight Mission Performance By Program Activities	MISSION	LAUNCH		ASSESSMENT	
		DATE	VEHICLE	VEHICLE	MISSION
	<u>EARTH OBSERVATIONS PROGRAM (Cont'd)</u>				
	ERTS-A	23 Jul 72	Delta	S	S
	Landsat-B (ERTS-B)	22 Jan 75	Delta	S	S
	Landsat-C	5 Mar 78	Delta	S	S
	TOTAL (Success/Attempts)			3/3	3/3
	<u>SPECIAL APPLICATION PROGRAM</u>				
	PACEOS 1 (A)	24 Jun 66	Thor-Agena	S	S
	Explorer 36 (GEOS-II) (GEOS-B)	11 Jan 68	Thor-Agena	S	S
	GEOS-3 (C)	9 Apr 75	Delta	S	S
	LAEOOS-A	4 May 76	Delta	S	S
	Seasat	26 Jun 78	Atlas-F	S	S
	TOTAL (Success/Attempts)			5/5	5/5
	<u>APPLICATION EXPLORERS</u>				
	AEM-1 (HCMM)	26 Apr 78	Scout	S	S
	AEM-2 (SAGE)	18 Feb 79	Scout	S	S
	AEM-3 (MAGSAT)	30 Oct 79	Scout	S	S
	TOTAL (Success/Attempts)			3/3	3/3

Summary Of
Space Technology
Flight Mission Performance

By Program Activities

MISSION	LAUNCH		ASSESSMENT	
	DATE	VEHICLE	VEHICLE	MISSION
SPACE TECHNOLOGY PROGRAM				
Suborbital Flights				
Reentry I (A)	1 Mar 62	Scout	S	U
Reentry II (B)	31 Aug 62	Scout	U	U
Reentry III (C)	20 Jul 63	Scout	S	U
Reentry IV (D)	18 Aug 64	Scout	S	S
Reentry V (E)	9 Feb 66	Scout	S	S
Reentry VI (F)	27 Apr 68	Scout	S	S
FIRE I (Re-entry Test)	14 Apr 64	Atlas-X259	S	S
FIRE II (Re-entry Test)	22 May 65	Atlas-X259	S	S
SERT-1A (Ion Engine Test)	20 Jul 64	Scout	S	S
RAM C-I (A) (Re-entry Test)	19 Oct 67	Scout	S	S
RAM C-II (B) (Re-entry Test)	22 Aug 68	Scout	S	S
RAM C-III (C) (Re-entry Test)	30 Sep 70	Scout	S	S
PAET (Re-entry Test)	20 Jun 71	Scout	S	S
TOTAL (Success/Attempts)			11/13	10/13
Orbital Flights				
Explorer (S-55) (Micrometeoroids)	30 Jun 61	Scout	U	U
Explorer 13 (S-55A) (Micrometeoroids)	25 Aug 61	Scout	S	S
Explorer 16 (S-55B) (Micrometeoroids)	16 Dec 62	Scout	S	S
Explorer 23 (S-55C) (Micrometeoroids)	6 Nov 64	Scout	S	S
Pegasus I (A) (Micrometeoroids)	16 Feb 65	Saturn I (SA-9)	S	S
Pegasus II (B) (Micrometeoroids)	25 May 65	Saturn I (SA-8)	S	S
Pegasus III (C) (Micrometeoroids)	30 Jul 65	Saturn I (SA-10)	S	S
SERT-II (Ion Engine Test)	4 Feb 70	Thor-Agena	S	S
Explorer 46 (WTS) (Micrometeoroids)	13 Aug 72	Scout	S	S
TOTAL (Success/Attempts)			7/9	6/9

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**ORIGINAL PAGE IS
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Soviet Spacecraft Designations

COSMOS: Cosmos appeared as a designator in 1962 to be used for explaining many different Soviet activities in space without giving specific details.

GORIZONT: Communications Satellite

EKRAN: Television Broadcasting Satellite

ELEKTRON: Satellites launched in pairs (with apogees of 4,000 miles and 40,000 miles) to map radiation belts.

INTERCOSMOS: Scientific satellites carrying experiments from other countries which make the payloads "international."

LUNA: Unmanned payloads launched to the Moon for lunar exploration. These include lunar orbiters, lunar landers, and lunar lander return missions.

MARS: Unmanned payloads launched to explore the planet Mars.

METEOR: Earth satellites primarily for collecting and reporting worldwide meteorological (weather) data. Early weather satellites were included in the Cosmos series.

MOLNIYA: A communications satellite appearing in a highly elliptical orbit over the same portion of the Earth each day on each of its climbs to apogee, giving good coverage to the Soviet Union.

OREOLO: Scientific satellite intended to study physical phenomena in upper atmosphere and for studying the nature of the polar lights. Launched jointly with France.

POLYOT: Earth satellites incorporating onboard propulsion systems for changing orbits.

PROGNOZ: "FORECAST" - A solar irradiation and magnetosphere satellite for changing orbits.

PROGRESS: Cargo supply ship

RADIO: Amateur Radio Satellite

RADUGA: Geosynchronous Communications Satellite.

SALYUT: The first Earth orbiting space station for prolonged occupancy and revisitation by Cosmonauts.

SOYUZ: A manned spacecraft incorporating provisions for three Cosmonauts.

SPUTNIK: An early designation for Soviet unmanned orbiting payloads. These included scientific payloads and unmanned tests of the Vostok spacecraft.

VENUS (VENERA): Unmanned payloads launched to explore the planet Venus.

VOSKHOD: Adaptation of the Vostok capsule to accommodate two and three Cosmonauts. Voskhod I orbited three persons and Voskhod II orbited two persons performing the first manned extravehicular activity.

VOSTOK: The Soviet's first manned capsule, roughly spherical, used to place the first six Cosmonauts in Earth orbit.

ZOND: Lunar and deep space probes not otherwise designated. Includes circumlunar spacecraft.

Soviet Spaceflights

Unofficial Tabulation Of USSR Spaceflights

	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	Total
1. Sputnik	2	1	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	
2. Luna (Lunik)	-	-	3	-	-	-	2*	-	4	5	-	1	1	2	2	1	1	2	-	1	-	-	-	-	25	
3. Vostok, Voskhod	-	-	-	2	2	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8		
4. Cosmos	-	-	-	-	12	12	27	52	34	61	64	55	72	81	72	85	74	85	101	84	96	79	88	94	1330	
5. Venus (Venik)	-	-	-	-	3*	-	-	2	-	1	-	2	1	-	-	-	-	2	-	-	-	-	-	2	16	
6. Mars	-	-	-	-	-	3*	-	-	-	-	-	-	2	-	4	-	-	-	-	-	-	-	-	-	9	
7. Polyot	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	
8. Electron	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	
9. Zond	-	-	-	-	-	-	2	1	-	3	1	1	-	-	-	-	-	-	-	-	-	-	-	-	6	
10. Molniya	-	-	-	-	-	-	2	2	3	3	2	5	3	6	8	7	10	7	6	6	5	4	8	87		
11. Proton	-	-	-	-	-	-	-	2	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	4	
12. Soyuz (Union)	-	-	-	-	-	-	-	-	1	2	5	1	2	-	2	3	4	3	3	5	4	6	3	44		
13. Meteor	-	-	-	-	-	-	-	-	-	2	4	4	3	2	5	4	3	4	-	3	2	2	-	38		
14. Intercosmos	-	-	-	-	-	-	-	-	-	2	2	1	3	2	2	2	2	1	2	2	-	-	-	-	2	
15. No Designation	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	
16. Salyut-1	-	-	-	-	-	-	-	-	-	-	1	-	1	2	-	1	1	-	-	-	-	-	-	1	3	
17. Orel-1	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	8	
18. PROGNOZ	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	1	1	1	1	-	-	-	-	-	6	
19. Launches for Other Countries	-	-	-	-	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-	-	-	10	
20. Raduga	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	
21. Eksan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	
22. Progress	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	
23. Radio	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	
24. Gorizont	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	
25. Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
Total to Date	2	1	3	3	6	20	17	35	64	44	66	74	70	88	97	89	107	95	111	121	105	120	102	110	125	1675

*Includes launches identified by the US but not announced by the USSR.

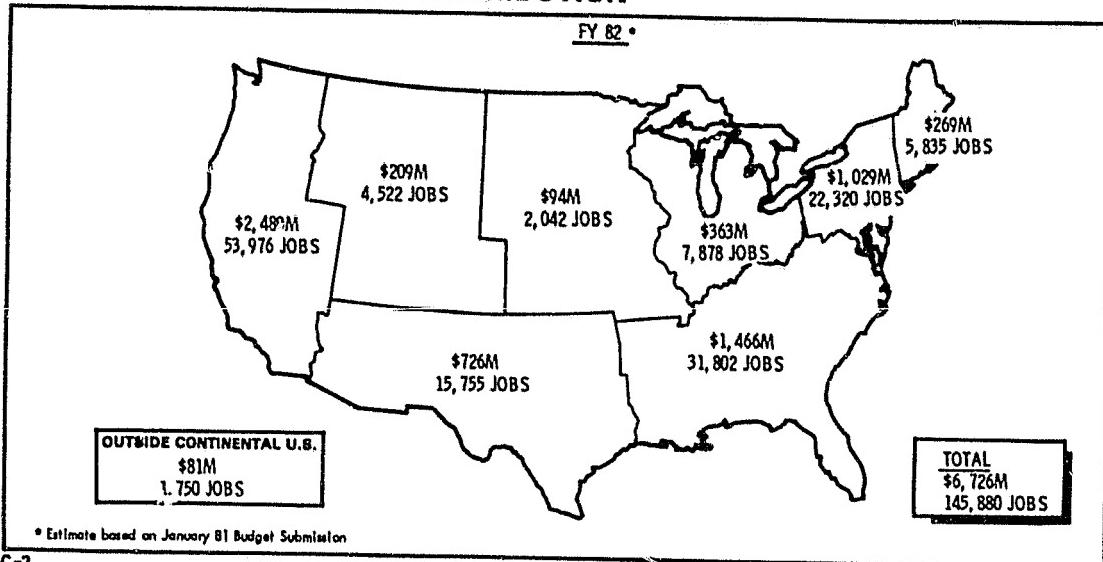
Sources: Foreign Broadcasting Information Service

Section C

Funding, Manpower, & Facilities

C-1

NASA JOBS AND FUNDING DISTRIBUTION



C-2

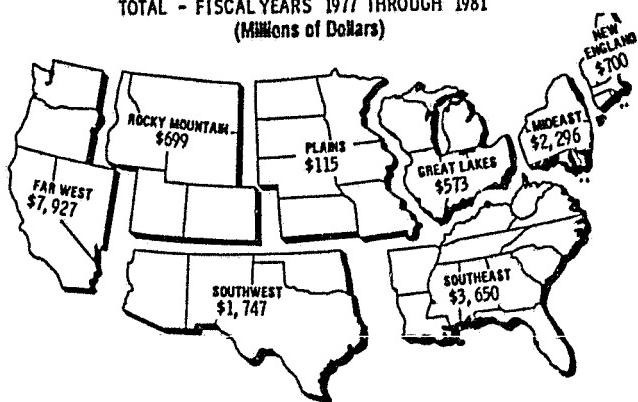
TOTAL EMPLOYMENT ON NASA PROGRAMS

	JUNE 1960	JUNE 1961	JUNE 1962	JUNE 1963	JUNE 1964	JUNE 1965	JUNE 1966	JUNE 1967	JUNE 1968	JUNE 1969	JUNE 1970
TOTAL EMPLOYMENT	48,788	74,577	137,658	246,304	379,084	409,900	393,924	306,926	267,871	218,345	167,803
CONTRACTOR EMPLOYMENT	36,500	57,500	115,500	218,400	347,100	376,700	360,000	273,200	235,400	186,600	136,580
NASA EMPLOYEES	10,286	17,077	22,158	27,904	31,684	33,200	33,924	33,726	32,471	31,745	31,223
	JUNE 1971	JUNE 1972	JUNE 1973	JUNE 1974	JUNE 1975	JUNE 1976	SEPT 1977	SEPT 1978	SEPT 1979	SEPT 1980	SEPT 1981
TOTAL EMPLOYMENT	149,609	144,968	134,055	125,054	127,733	132,039	124,069	124,569	131,931	135,613	133,792 (Estimated)
CONTRACTOR EMPLOYMENT	120,130	117,540	108,100	100,200	103,400	108,000	100,500	101,400	109,100	113,000	111,919 (Estimated)
NASA EMPLOYEES	29,479	27,428	25,955	24,854	24,333	24,039	23,569	23,189	22,831	22,613	21,873

C-3

U.S. GEOGRAPHICAL DISTRIBUTION OF NASA PRIME CONTRACT AWARDS*

TOTAL - FISCAL YEARS 1977 THROUGH 1981
(Millions of Dollars)



*Excludes smaller procurements, generally those of less than \$10,000; also excludes awards placed through other Government agencies, awards outside the U.S., and actions on the JPL contracts.

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NASA CONTRACT AWARDS BY STATE (FY 81)

STATE	PRIME CONTRACT AWARDS TO STATE		PRIME CONTRACT AWARDS TO STATE	
	AMOUNT	% OF TOTAL	AMOUNT	% OF TOTAL
TOTAL	\$4,346,335	100.0		
Alabama	84,017	2.1	Nebraska	398
Alaska	2,111	*	Nevada	1,101
Arizona	21,856	0.6	New Hampshire	2,924
Arkansas	315	*	New Jersey	41,313
California	1,875,003	42.8	New Mexico	16,132
Colorado	89,124	2.0	New York	56,319
Connecticut	112,886	2.6	North Carolina	4,133
Delaware	1,072	*	North Dakota	13
District of Columbia	59,760	0.5	Ohio	70,009
Florida	536,884	12.2	Oklahoma	1,936
Georgia	9,132	0.2	Oregon	4,222
Hawaii	3,420	0.1	Pennsylvania	105,714
Idaho	253	*	Rhode Island	1,148
Illinois	11,854	0.3	South Carolina	393
Indiana	18,430	0.4	South Dakota	90
Iowa	3,738	0.1	Tennessee	4,583
Kansas	3,896	0.1	Texas	314,300
Kentucky	689	*	Utah	85,352
Louisiana	205,045	4.7	Vermont	417
Maine	14	*	Virginia	124,461
Maryland	309,600	7.1	Washington	34,786
Massachusetts	56,409	1.3	West Virginia	34
Michigan	14,265	0.3	Wisconsin	5,726
Minnesota	6,547	0.1	Wyoming	248
Mississippi	30,770	0.7		
Missouri	6,938	0.2		
Montana	164	*		

*Less than .03 percent.

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Financial Summary

**ORIGINAL PAGE IS
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(In Millions of Dollars)

As of 30 Sep 81

FISCAL YEAR	TOTAL APPROPRIATIONS	TOTAL DIRECT OBLIGATIONS	OUTLAYS			
			TOTAL	RESEARCH AND DEVELOPMENT (R&D)	CONSTRUCTION OF FACILITIES (C&F)	RESEARCH AND PROG. MGMT. (R&PM)
1959	330.9	298.7	145.5	34.0	24.8	86.7
1960	523.6	486.9	401.0	755.7	54.3	91.0
1961	966.7	908.3	744.3	487.0	98.2	159.1
1962	1,823.3	1,691.7	1,257.0	935.6	114.3	207.1
1963	3,674.1	3,448.4	2,552.4	2,308.4	225.3	18.7
1964	5,100.0	4,864.1	4,171.0	3,317.4	437.7	415.9
1965	5,250.0	5,500.7	5,092.9	3,984.5	530.9	577.5
1966	5,175.0	5,350.5	5,933.0	4,741.1	572.5	619.4
1967	4,968.0	5,011.7	5,425.7	4,487.2	288.6	649.9
1968	4,386.9	4,520.4	4,723.7	3,946.1	126.1	651.5
1969	3,995.3	4,045.2	4,251.7	3,530.2	65.3	656.2
1970	3,749.2	3,858.9	3,753.1	2,991.6	52.3	707.2
1971	3,512.6	3,324.0	3,381.9	2,630.4	43.7	707.8
1972	3,310.1	3,228.6	3,422.9	2,623.2	50.3	749.4
1973	3,407.6	3,154.0	3,315.2	2,541.4	44.7	729.1
1974	3,039.7	3,122.4	3,256.2	2,421.6	75.1	759.5
1975	3,231.2	3,265.9	3,266.5	2,420.4	85.3	760.8
1976	3,551.8	3,604.8	3,667.0	2,746.8	120.9	799.3
TO	932.2	918.8	951.4	730.7	25.8	194.9
1977	3,819.1	3,858.1	3,945.3	2,980.7	105.0	859.6
1978	4,063.7	4,000.3	3,983.1	2,988.7	124.2	870.2
1979	4,561.2	4,557.5	4,196.5	3,130.8	132.7	925.0
1980	5,243.4	5,098.1	4,851.6	3,701.4	140.3	1,009.9
1981	5,522.7	5,606.2	5,421.2	4,223.0	146.8	1,051.4

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**ORIGINAL PAGE IS
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R&D Funding By Program

(In Millions of Dollars) As of 30 Sep 81					
	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977 & Prior
OSTS					
Space Shuttle	1,994.7	1,870.3	1,637.6	1,348.8	4,600.3
Space Flight Operations	235.6	206.3	215.8	208.8	3,827.5
STS Operations Capability Dev	(44.3)	(20.7)	(31.6)	(26.9)	(32.6)
Development Test & Mission Sys	(187.5)	(172.6)	(177.2)	(171.9)	(1,050.3)
Advanced Programs	(6.8)	(13.0)	(7.0)	(10.0)	(99.3)
Skylab	(—)	—	—	—	(2,426.4)
Apollo Soyuz Test Project	(—)	—	—	—	(216.9)
Ad. Manned Missions	—	—	—	—	89.7
Completed Programs	(—)	—	—	—	22,023.5
Apollo	(—)	—	—	—	(20,446.7)
Gemini	(—)	—	—	—	(1,281.0)
Other Completed Programs	—	—	—	—	(295.8)
TOTAL OSTS	2,231.3	2,076.5	1,853.4	1,557.6	30,541.0
OSTO					
Expendable Launch Vehicles	54.4	67.4	73.6	136.5	2,291.9
Space Flight Operations	439.6	240.3	83.9	55.0	32.8
STS Operations	(260.4)	(148.1)	(25.6)	(16.5)	—
STS Operations Capability Dev	(179.2)	(92.2)	(58.3)	(38.5)	(32.8)
TOTAL OSTO	194.0	307.7	157.5	191.5	2,324.7

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**ORIGINAL PAGE IS
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R&D Funding By Program

(In Millions of Dollars) As of 30 Sep 81

	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977 & Prior
OSS					
Physics & Astronomy	320.0	335.0	268.8	211.9	2,175.7
Planetary Exploration	174.1	211.4	181.9	146.7	3,551.7
Life Sciences	42.2	43.8	40.1	33.3	145.8
Manned Space Sciences	—	—	—	—	46.4
Launch Vehicle Dev.	—	—	—	—	614.4
Bioscience	—	—	—	—	257.8
Space Applications	—	—	—	—	—
TOTAL OSS	536.3	607.8	492.1	394.0	6,791.6
OSTA					
Space Applications	325.7	319.5	264.6	230.0	2,095.1
Tech. Utilization	8.8	12.0	9.1	9.1	73.4
Physics and Astronomy	—	—	13.0	11.2	15.9
Space Flight Operations	—	—	—	4.0	58.3
Payload Planning & Program Integration	(—)	—	—	(4.0)	(58.3)
TOTAL OSTA	354.5	331.5	286.7	254.3	2,242.7
OSTDS					
Tracking & Data Acquisition	341.0	332.1	299.8	276.3	3,854.2
OCE					
Standards & Practices	2.1	3.8	9.0	9.0	24.2

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**ORIGINAL PAGE IS
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R&D Funding By Program

(in Millions of Dollars) As of 30 Sep 81

	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977 & Prior
GAST					
Current Programs					
Space Research & Tech.	107.5	111.8	98.3	85.7	431.0
Aeronautical Research & Tech	268.0	308.3	264.1	228.0	998.3
Energy Tech. Applications	1.0	3.0	5.0	7.0	20.3
Prior Programs					
Apollo Applications Expr.	—	—	—	—	1.0
Chemical & Solar Power	—	—	—	—	62.3
Basic Research	—	—	—	—	183.0
Space Vehicle Systems	—	—	—	—	332.4
Electronic Systems	—	—	—	—	272.0
Human Factor Systems	—	—	—	—	151.4
Space Power & Elec. Prop. Sys	—	—	—	—	365.8
Nuclear Rockets	—	—	—	—	512.0
Chemical Propulsion	—	—	—	—	365.4
Aeronautical Vehicles	—	—	—	—	481.5
Nuclear Power & Propulsion	—	—	—	—	44.2
Mission Analysis	—	—	—	—	16.0
TOTAL GAST	378.0	435.1	307.4	324.3	4,230.2
OPERATING ACCOUNT	17.8	5.3	5.2	4.7	67.1
UNIVERSITY AFFAIRS	—	—	—	—	229.2
TOTAL PROGRAM	4,335.8	4,088.1*	3,477.2**	3,011.6***	50,314.1
Approp., Trans. & Adjustment	—	—	—	—	308.1
Appropriation	4,335.8	4,088.1*	3,477.2**	3,011.6***	50,319.3

*Includes \$1 unobligated balance which lapsed 9-30-81.
 **Includes \$3 unobligated balance which lapsed 9-30-80.
 ***Includes \$3 unobligated balance which lapsed 9-30-79.

**ORIGINAL PAGE IS
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R&D Funding By Location

(In Millions of Dollars)

As of 30 Sep 81

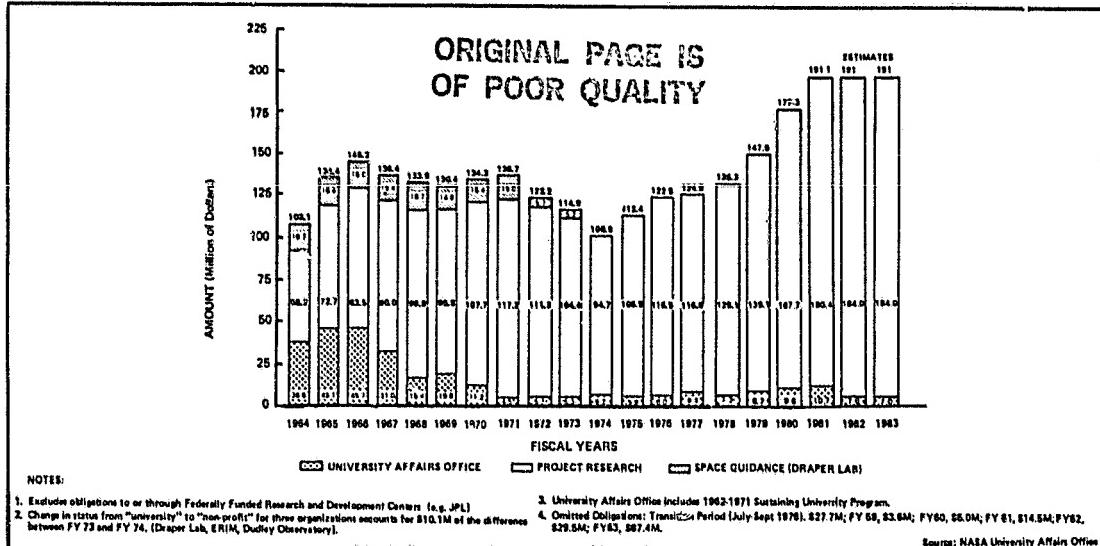
	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977 & Prior
INSTALLATION					
NASA Headquarters	136.4	132.5	115.3	95.0	2,242.4
Ames Research Center	139.7	142.5	140.4	115.5	1,176.3
Electronics Research Center			--	--	82.5
Dryden Flight Research Center	18.4	16.6	13.1	18.6	242.7
Goddard Space Flight Center	556.9	550.9	515.5	492.9	6,395.6
Jet Propulsion Laboratory	245.2	320.5	236.8	201.4	3,018.0
Kennedy Space Center	357.8	300.6	234.9	170.0	2,514.8
Langley Research Center	142.3	168.2	138.2	157.1	2,329.3
Lewis Research Center	154.9	170.4	148.5	133.6	2,854.3
Johnson Space Center	1,508.5	1,398.3	1,161.8	970.7	15,427.6
Marshall Space Flight Center	982.0	888.2	785.2	630.9	12,292.3
Space Nuclear Systems Office	--	--	--	--	436.2
Wallops Flight Center	19.6	16.8	17.1	15.9	156.6
Western Support Office	--	--	--	--	119.7
National Space Technology Labs.	5.7	9.3	9.2	10.0	20.8
NaPO	--	--	--	--	4.7
PLOO	--	--	--	--	.3
Station 17	-14.0	-31.7	-38.8	--	--
Undistributed	76.9	--	--	--	.1
TOTAL PROGRAM	4,335.5	4,088.1*	3,477.2**	3,011.6***	50,314.1
Appropriations Transfer & Adjustments	+8	+3.0	--	+1.4	305.1
Appropriation & Availability Total	4,336.3	4,091.1*	3,477.2**	3,013.0***	50,619.2

*Includes .1 unobligated balance which lapsed 9-30-81.

**Includes .3 unobligated balance which lapsed 9-30-80.

***Includes .3 unobligated balance which lapsed 9-30-79.

NASA OBLIGATIONS TO UNIVERSITIES



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**ORIGINAL PAGE IS
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Construction Of Facilities

(In Millions of Dollars)

As of 30 Sep 81

INSTALLATION	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977	TO	FY 1976	FY 1975	FY 1974	FY 1973	FY 1972	FY 1971
Ames Research Center	13.9	2.9	9.3	--	4.5	--	2.7	3.7	--	3.2	6.5	1.1
Electronics Research Center	--	--	--	--	--	--	--	--	--	--	--	--
Dryden Flight Research Center	--	--	--	.4	.6	--	--	--	--	--	--	--
Goddard Space Flight Center	--	--	5.6	4.5	--	--	--	1.9	1.4	.6	.7	1.4
Jet Propulsion Laboratory	3.5	--	4.6	3.1	--	--	--	5.2	1.3	.5	--	1.9
Kennedy Space Center	.8	5.7	--	1.7	2.8	--	--	--	4.0	10.0	15.6	.3
Langley Research Center	20.7	7.9	5.9	1.7	6.1	--	1.6	3.2	4.0	4.3	--	.6
Lewis Research Center	10.4	5.7	6.0	.8	2.9	--	--	3.1	--	9.7	.8	.7
Johnson Space Center	--	--	--	2.2	2.2	--	--	--	--	.6	--	1.1
Marshall Space Flight Center	4.6	6.6	--	--	--	--	--	--	--	--	--	--
Micoud Assembly Facility	--	--	--	--	--	--	--	--	--	--	--	--
National Space Technologies Lab.	--	--	--	.6	--	--	--	--	--	--	--	--
Nuclear Rocket Dev. Station	--	--	--	--	--	--	--	--	--	--	--	--
Pacific Launch Operations	--	--	--	--	--	--	--	--	--	--	--	--
Wallops Flight Center	--	1.1	--	--	--	--	1.0	1.1	.8	.6	--	--
Large Aeronautical Facilities	--	45.9	50.1	37.0	31.0	--	--	--	--	--	--	--
Various Locations	2.2	1.8	--	1.4	--	--	--	7.7	3.7	--	.7	22.5
Space Shuttle Facilities	10.1	27.8	31.1	64.0	30.7	--	46.7	75.4	55.8	27.0	18.5	--
Space Shuttle Payload Facilities	1.8	4.4	--	7.5	4.4	--	--	--	--	--	--	--
Repair	15.0	12.0	--	--	--	--	--	--	--	--	--	--
Rehabilitation & Modification*	19.0	19.8	14.1	18.9	17.8	7.0	15.9	14.8	14.8	11.6	7.0	(1.6)
Minor Construction	4.0	3.5	4.2	5.9	2.8	1.2	5.0	4.5	4.5	1.7	--	--
Facility Planning & Design	10.0	14.0	10.6	11.7	12.6	2.5	9.9	10.8	13.5	7.8	3.5	6.5
Unallocated Planning & Design	--	--	--	--	--	--	--	--	--	--	--	2.4
TOTAL PLAN	115.8	159.1	147.5	162.3	118.7	10.7	82.8	142.5	100.8	78.5	54.2	36.8
Approp. Trans. & Adj.	--	--	--	--	--	+1.1	-7.7	-2.3	+3.3	-1.7	-1.6	-13.8
Approp. & Availability	115.0	156.1	147.5	160.9	118.1	10.8	82.1	140.2	101.1	77.3	52.7	25.0

*Included in Various Locations Prior to FY 1972

**ORIGINAL PAGE IS
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Construction Of Facilities

As of 30 Sep 81

(In Millions of Dollars)												
INSTALLATION	FY 1970	FY 1969	FY 1968	FY 1967	FY 1966	FY 1965	FY 1964	FY 1963	FY 1962	FY 1961	FY 1960	FY 1959
Ames Research Center	.3	.4	4.2	--	2.8	5.8	11.3	14.3	6.3	.6	6.1	3.8
Electronics Research Center	--	--	--	7.4	5.2	10.4	1.6	--	--	--	--	--
Dryden Flight Research Cir.	.9	--	--	--	--	--	2.5	1.8	--	--	1.8	--
Goddard Space Flight Center	.7	--	.6	.7	2.4	2.2	17.7	21.3	11.5	9.4	14.0	3.9
Jet Propulsion Laboratory	--	--	3.1	.3	.9	3.6	3.0	11.4	3.6	8.6	7.7	--
Kennedy Space Center	19.5	7.4	29.4	34.6	7.2	87.8	273.4	332.8	115.6	27.8	4.0	--
Langley Research Center	5.6	--	--	6.4	8.4	3.3	9.7	9.8	6.9	12.3	4.5	10.8
Lewis Research Center	.3	--	2.1	16.2	.9	.8	20.4	45.5	1.1	9.6	6.6	8.0
Johnson Space Center	--	1.0	.6	11.8	4.0	17.3	33.9	24.5	--	--	--	--
Marshall Space Flight Center	--	--	.9	--	1.8	12.0	28.2	40.5	30.7	26.1	--	--
Micoud Assembly Facility	--	.4	.5	.5	.3	6.2	7.3	28.5	--	--	--	--
National Space Tech Lab	1.5	--	--	--	--	58.4	102.9	77.1	--	--	--	--
Nuclear Rocket Dev. Station	--	--	--	--	--	--	4.1	11.5	--	--	--	--
Pacific Launch Ops. Office	--	--	--	--	--	.3	--	--	.6	.4	1.1	--
Wallop Flight Center	.6	.5	.7	.2	1.0	1.7	.5	4.1	11.3	2.0	--	16.1
Various Locations	26.4	20.9	3.5	6.5	15.1	28.3	187.8	129.9	159.0	26.0	52.4	5.1
Facility Planning & Design	3.5	.9	5.4	5.5	5.0	8.8	10.4	12.9	9.8	--	--	--
Unallocated or Undistributed	.5	--	--	--	--	--	23.7	--	--	--	--	--
TOTAL PROGRAM PLAN	50.6	31.5	42.0	90.1	55.0	247.0	738.4	765.9	356.4	124.8	98.2	47.7
Appro. Trans. & Adj.	+2.6	-9.7	-6.1	-7.1	+5.0	+15.9	-58.4	+10.3	-40.4	-2.0	-13.6	+.3
Appro. & Availability	53.2	21.8	35.9	83.0	60.0	262.9	650.0	776.2	316.0	122.8	84.6	48.0

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Research And Program Management

**ORIGINAL PAGE IS
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(In Millions of Dollars)

As of 30 Sep 81

INSTALLATION	FY 1981	FY 1980	FY 1979	FY 1978	FY 1977	TQ	FY 1976	FY 1975	FY 1974	FY 1973	FY 1972	FY 1971	FY 1970
NASA Headquarters 1/	96.4	89.5	84.5	81.1	78.7	20.3	68.2	68.9	63.0	61.6	61.6	64.9	63.2
Ames Research Center	72.2	67.4	62.7	57.8	53.0	13.3	50.9	48.6	46.4	42.4	42.2	40.6	37.6
Electronics Research Center	--	--	--	--	--	--	--	--	--	--	--	--	19.1 3/
Dryden Flight Research Center	22.6	20.4	19.1	18.2	17.3	5.3	14.5	13.2	12.2	11.6	11.7	11.1	10.3
Goddard Space Flight Center	142.5	133.5	127.9	123.9	114.5	28.6	108.6	104.8	97.5	95.7	96.5	93.1	86.4
Kennedy Space Center	150.2	133.2	123.3	113.8	109.7	28.6	99.8	95.9	93.6	91.1	92.6	98.3	97.6
Langley Research Center	120.8	114.0	106.6	102.0	95.2	24.2	93.1	88.6	83.8	78.6	80.2	75.3	69.8
Lewis Research Center	99.9	94.8	87.5	84.9	83.6	22.2	80.7	80.3	79.8	81.2	82.5	78.0	73.9
Johnson Space Center	176.0	164.1	152.9	146.7	138.9	37.5	128.8	121.3	118.0	110.6	113.0	111.1	106.6
Marshall Space Flight Center	165.0	155.9	149.0	143.4	138.5	34.7	132.8	129.1	136.6	137.2	138.9	145.1	125.7
National Space Tech Lab	5.5	4.9	4.5	2.7	1.8	.5	1.8	1.6	1.6	--	--	--	--
Pacific Launch Operations	--	--	--	--	--	--	--	--	--	--	--	--	--
Space Nuclear Systems Office	--	--	--	--	--	--	--	--	--	--	--	--	--
Western Support Office	--	--	--	--	--	--	--	--	--	1.1	2.2	2.4	1.3
Wallops Flight Center	20.0	17.7	15.8	15.0	13.2	4.0	13.1	12.4	11.5	10.7	10.9	10.3	9.7
TOTAL PROGRAM PLAN	1,071.1	996.0	933.8	889.5	844.4	220.2	792.3	764.7	744.0	721.8	732.3	730.2	702.2
Unobligated Balance Lapsing	.3	.2	.3	.3	.2	.6	--	.2	.6	.6	.3	.2	.4
Appro. Transfers, Net	--	--	--	--	--	--	--	- 4.9	--	--	+ 2.1	- 7.7	- 12.6
Appropriation Total	1,071.4	996.2	934.1	889.8	844.6	220.8	792.3	760.0	744.6	729.4	734.7	722.7	690.0

1/ Includes NoPO

2/ Includes \$10 million for basic institutional and other requirements for agencies resident at MTF/Slidell.

3/ ERC was closed on June 30, 1970.

**ORIGINAL PAGE IS
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Research And Program Management

INSTALLATION	As of 30 Sep 81										
	FY 1969	FY 1968	FY 1967	FY 1966	FY 1965	FY 1964	FY 1963	FY 1962	FY 1961	FY 1960	FY 1959
NASA Headquarters 1/	60.8	57.1	57.4	54.4	69.3	47.1	51.3	26.0	13.9	8.5	5.7
Ames Research Center	34.0	33.8	33.8	33.2	31.8	29.9	25.6	22.9	19.9	17.8	16.3
Electronics Research Center	17.2	15.4	12.2	6.4	3.2	.5	--	--	--	--	--
Dryden Flight Research Center	9.7	9.5	9.5	9.4	10.5	9.4	7.5	7.2	5.1	4.3	3.3
Goddard Space Flight Center	73.2	68.3	71.1	64.4	93.3	61.9	32.8	39.1	20.4	15.5	1.8
Kennedy Space Center	95.8	93.1	92.7	82.0	40.8	29.8	18.8	6.4	--	--	--
Langley Research Center	43.0	62.2	64.3	63.5	59.0	52.1	51.8	46.6	39.1	33.0	31.4
Lewis Research Center	67.9	66.2	66.3	66.4	69.3	61.5	53.4	45.2	35.8	31.2	27.8
Johnson Space Center	98.9	93.7	93.7	86.5	88.7	64.7	51.0	24.1	9.2	--	--
Marshall Space Flight Center	116.3	126.2	128.7	128.4	138.7	124.3	112.6	89.2	60.6	5.1	--
Pacific Launch Operations	--	--	--	.6	.9	.9	.6	.1	--	--	--
Space Nuclear Systems Office	2.1	2.0	3.0	1.8	1.7	1.5	1.0	.3	--	--	--
Western Support Office	--	1.0	3.2	4.9	5.0	4.4	3.4	1.4	5.7	.5	--
Wallops Flight Center	9.1	8.8	9.7	9.3	11.1	8.8	8.9	7.1	5.0	2.7	1.3
TOTAL PROGRAM PLAN	648.0	639.3	646.6	611.2	623.3	496.6	438.7	315.6	222.7	118.6	87.6
Unobligated Balance Lapping	.1	.1	.9	.6							
Appro. Transfers, Net	- 44.9	- 11.4	7.5	- 27.8	+ .2	- 2.8					
Appropriation Total	603.2	628.0	546.0	384.0	623.5	494.0					

^{1/} Includes NoPO

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**ORIGINAL PAGE IS
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Personnel Summary

Onboard At End Of Fiscal Year*

As of 30 Sep 81

INSTALLATION	FY 81	FY 80	FY 79	FY 78	FY 77	FY 76	FY 75	FY 74	FY 73	FY 72	FY 71	FY 70
NASA Headquarters	1,638	1,638	1,534	1,405	1,619	1,709	1,673	1,734	1,747	1,755	1,894	2,187
Ames Research Center	1,652	1,713	1,713	1,691	1,645	1,724	1,754	1,776	1,740	9,844	1,968	2,033
Dryden Flight Research Center	491	499	498	514	346	566	544	531	509	539	579	583
Goddard Space Flight Center	3,431	3,535	3,562	3,641	3,666	3,803	3,871	3,936	3,852	4,178	4,459	4,487
Kennedy Space Center	2,224	2,291	2,264	2,234	2,270	2,404	2,377	2,408	2,516	2,568	2,704	2,895
Langley Research Center	3,028	3,094	3,125	3,167	3,207	3,407	3,472	3,504	3,389	3,592	3,830	3,920
Lewis Research Center	2,782	2,901	2,907	2,964	3,061	3,168	3,181	3,172	3,368	3,866	4,083	4,240
Johnson Space Center	3,498	3,616	3,563	3,617	3,640	3,756	3,877	3,886	3,896	3,935	4,298	4,537
Marshall Space Flight Center	3,479	3,646	3,677	3,808	4,014	4,336	4,337	4,574	5,287	5,555	6,060	6,325
Space Nuclear Systems Office	--	--	--	--	--	--	--	--	--	45	89	103
NASA Pasadena Office (NaPO)	--	--	--	--	--	--	35	39	39	40	44	72
Wallop Flight Center	400	406	409	429	426	437	441	447	434	465	497	522
National Space Technology Lab	113	111	100	108	94	72	76	--	--	--	--	--
NASA TOTAL	22,738	23,470	23,360	23,779	24,188	23,426	25,638	26,007	26,777	28,382	30,506	32,548

*Includes Temporary Personnel

Excludes employees in the youth programs.

**ORIGINAL PAGE IS
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Personnel Summary

Onboard At End Of Fiscal Year*

INSTALLATION	FY 1969	FY 1968	FY 1967	FY 1966	FY 1965	FY 1964	FY 1963	FY 1962	FY 1961	FY 1960	FY 1959
NASA Headquarters	2,293	2,310	2,373	2,336	2,135	2,158	2,001	1,477	735	587	492
Ames Research Center	2,117	2,197	2,264	2,310	2,270	2,204	2,116	1,658	1,471	1,421	1,464
Electronics Res. Center	951	950	791	555	250	33 ^b /	25 ^b /	---	---	---	---
Dryden Flt Research Ctr	601	622	642	662	669	619	616	538	447	408	340
Goddard Sp. Flt. Ctr.	4,295	4,073	3,997	3,958	3,774	3,675	3,487	2,755	1,599	1,255	398
Kennedy Space Center	3,058	3,044	2,867	2,669	2,464	1,625	1,181	337	---	---	---
Langley Research Cen.	4,087	4,219	4,405	4,485	4,371	4,336	4,220	3,894	3,53 ^c	3,203	3,62 ^c
Lewis Research Center	4,399	4,583	4,956	5,047	4,897	4,859	4,697	3,800	2,773	2,722	2,80 ^c
Johnson Space Center	4,751	4,956	5,064	4,889	4,413	4,277	3,345	1,786	794	In GSFC	---
Marshall Sp. Flt. Center	6,639	6,935	7,602	7,740	7,719	7,679	7,332	6,843	5,948	370	---
Pacific Launch Ops.	---	---	---	d/	21	22	17	---	---	---	---
Space Nuclear Sys. Ofc.	104	108	113	115	116	112	98	39	4	---	---
Western Support Ofc.	---	52	119	294	377	376	308	136	60	37	---
NASA Pasadena Ofc.	80	79	91	83	19	9 ^c /	---	---	---	---	---
Wallop Station	554	565	576	563	554	530	493	421	302	229	171
NASA TOTAL	33,923	34,641	35,830	35,708	34,049	32,499	29,934	23,686	17,471	10,232	9,235

^a/ Prior years figures included in WSO. * Includes Temporary Personnel

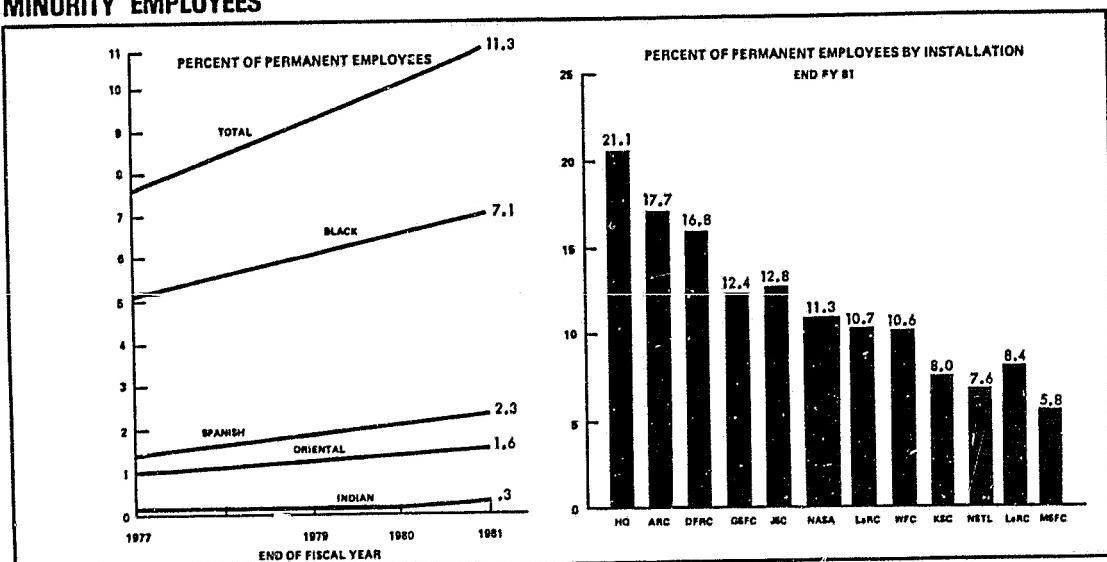
^b/ Figures for North Eastern Office.

^c/ Effective in 1968 WSO was disestablished and elements merged with NaPO

^d/ Effective in 1966 PLDO activity was merged under KSC.

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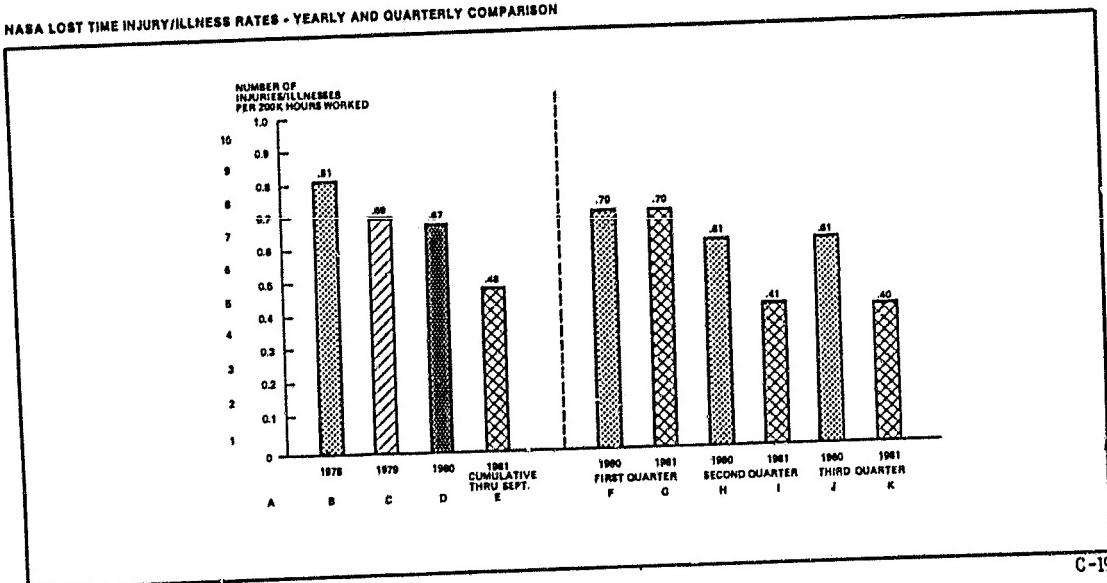
MINORITY EMPLOYEES



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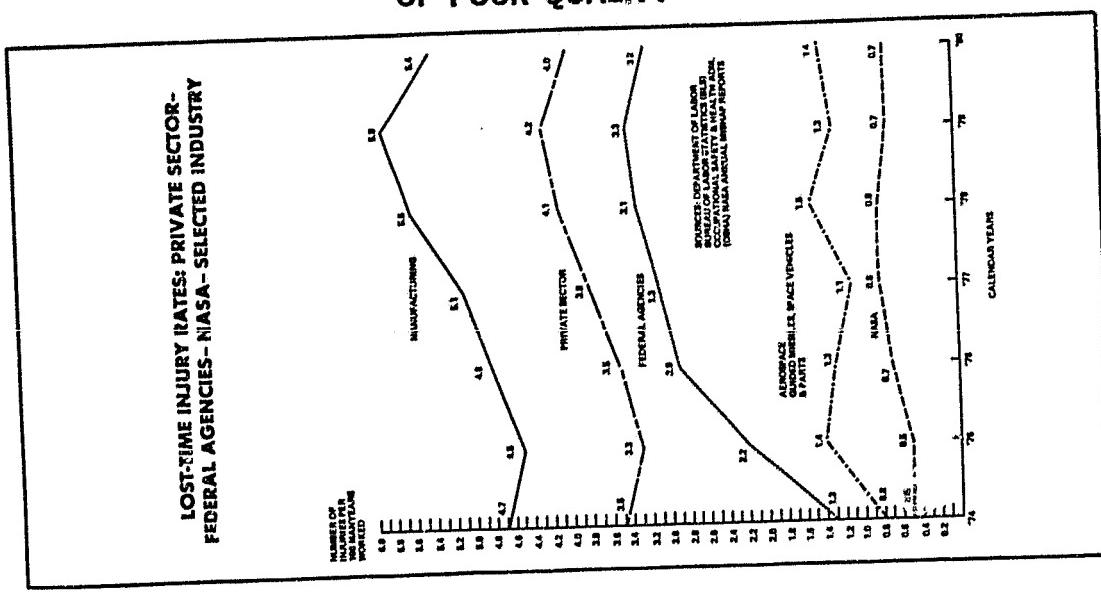
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NASA LOST TIME INJURY/ILLNESS RATES - YEARLY AND QUARTERLY COMPARISON



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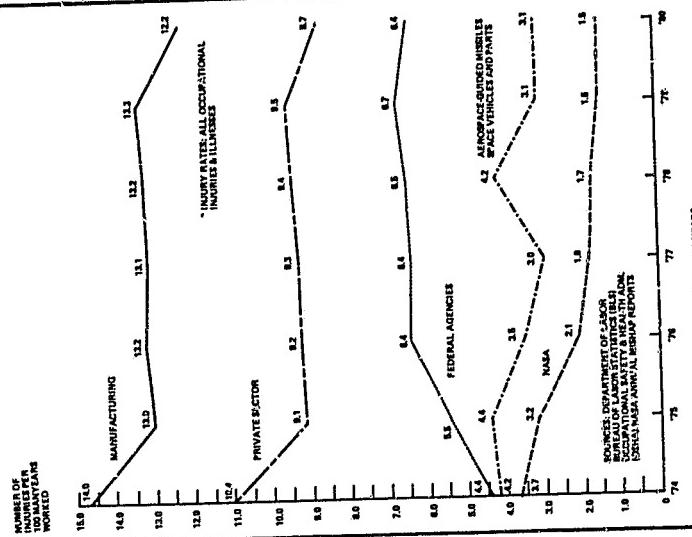
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INJURY RATES: * PRIVATE SECTOR
FEDERAL AGENCIES-NASA-SLECTED INDUSTRY



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GLOSSARY

AD	Atmospheres Dynamics	IUE	International Ultraviolet Explorer
AE	Atmosphere Explorer	Landsat	Earth Resources Satellite
AEM	Applications Explorer Mission	MAGSAT	Magnetic Satellite
Apollo	Three-man Spacecraft	Mercury	One-man Spacecraft
ATS	Applications Technology Satellite	Nimbus	Meteorological Satellite
BSE	Broadcasting Satellite Experimental	NOAA	National Oceanic & Atmospheric Agency
COS	Comic Ray Satellite	OT	Operational Tires
CRL	Cambridge Research Lab	OTS	Orbiting Test Satellite
CS	Communications Satellite	RAE	Radio Explorer
CTS	Communications Test Satellite	Ranger	Lunar Probe Spacecraft
DE	Dynamite Explorer	RFD	Re-entry Flight Demonstration
ERTS	Earth Resources Technology Satellite	SAGE	Stratospheric Aerosol Gas Experiment
ESA	European Space Agency	SAS	Small Astronomy Satellite
ESRO	European Space Research Organization	SBS	Satellite Business Systems
ESSA	Environmental Science Services Agency	SCATHA	Spacecraft Charging at High Altitudes
Gemini	Two-man Spacecraft	Seasat	Ocean Research Satellite
GEOS	Geodetic Earth Observation Satellit	SME	Solar Mesosphere Explorer
GMS	Geostationary Meteorological Satellite	SMM	Solar Maximum Mission
GOES	Geostationary Operational Environmental Satellite	SMS	Synchronous Meteorological Satellite
HCMM	Heat Capacity Mapping Mission	Surveyor	Lunar Soft Landing Spacecraft
HEAO	High Energy Astronomy Observatory	Syncom	Synchronous Communications Satellite
IMP	Interplanetary Monitoring Platform	Tires	Television Infrared Observation Satellite
IRAS	Infrared Astronomical Satellite	TOS	Tires Operational Satellite
ISEE	International Sun-Earth Explorer		
ITOS	Improved Tires Operational Satellite		